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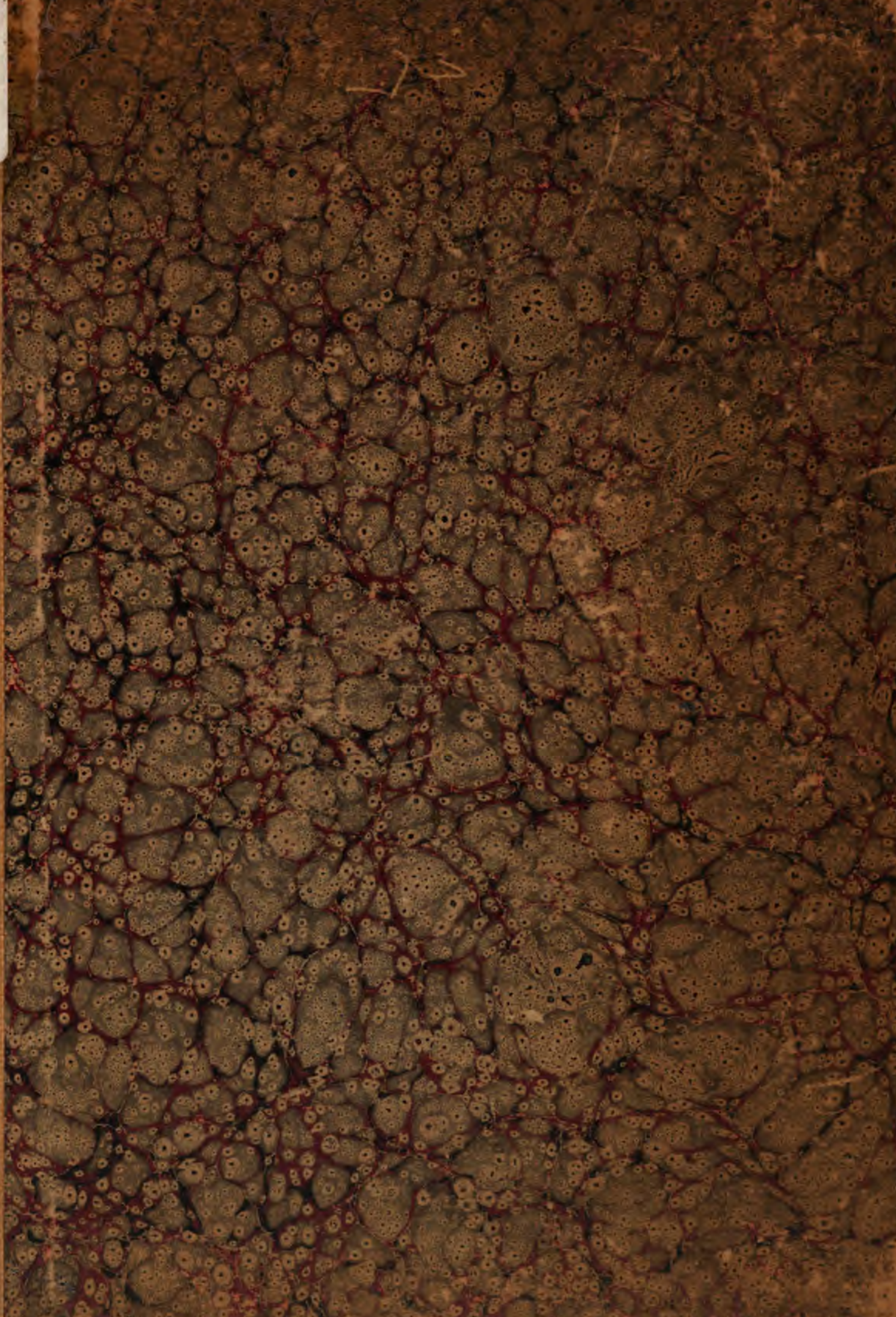
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BUREAU OF THE CENSUS

S. N. D. NORTH, DIRECTOR

BULLETIN 9

# MINES AND QUARRIES



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1904



JUL 6 1904

DEPARTMENT OF COMMERCE AND LABOR

BUREAU OF THE CENSUS

S. N. D. NORTH, DIRECTOR

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BULLETIN 9  
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# MINES AND QUARRIES



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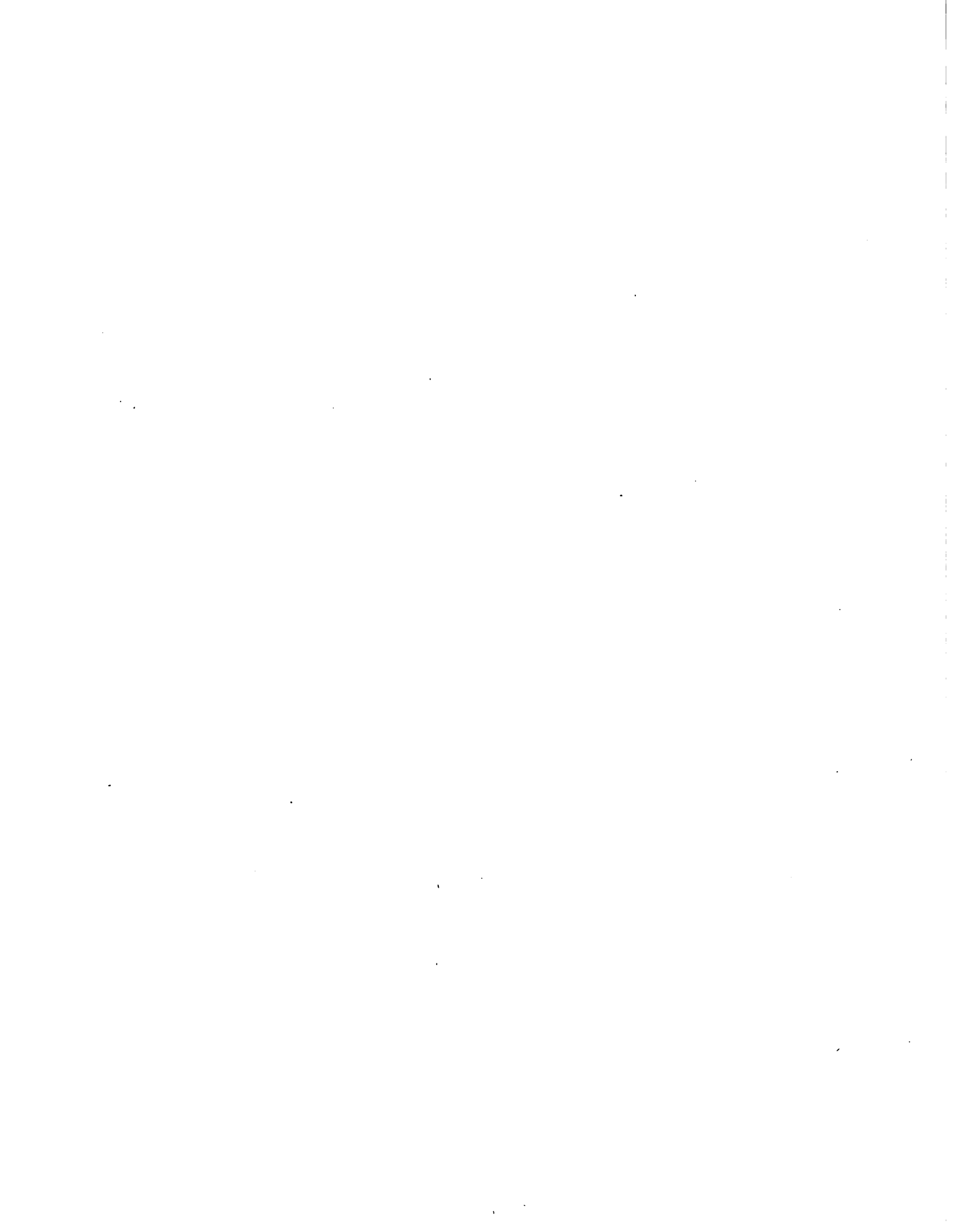
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## LETTER OF TRANSMITTAL.

DEPARTMENT OF COMMERCE AND LABOR,  
BUREAU OF THE CENSUS,  
*Washington, D. C., May 9, 1904.*

SIR:

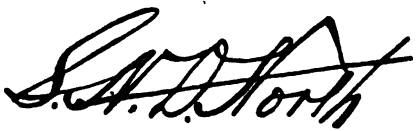
I have the honor to transmit herewith, in bulletin form, a preliminary report on mines and quarries, including also petroleum and natural gas wells, for the year ending December 31, 1902. It has been prepared in the Bureau of the Census under the supervision of Mr. William M. Steuart, chief statistician for manufactures.

Section 7, of the act of Congress of March 6, 1902, provides that the statistics relating to "mines, mining, quarries, and minerals, and the production and value thereof, including gold in divisions of placer and vein, and silver mines, and the number of men employed, the average daily wage, average working time, and aggregate earnings in the various branches and aforesaid divisions of the mining and quarrying industries" shall be collected decennially. The statistics upon these subjects have been collected and meet all the requirements of the law. The detailed data are reserved for publication in the final report.

The mining census was conducted in collaboration with the United States Geological Survey, and that office had immediate control of the field force, collecting the census statistics in connection with the data required for its annual report on the mineral resources of the United States. The objects of this collaboration were to avoid duplication of the field work and the necessity of calling on the mine operators for duplicate reports of similar information covering the same period of time, also to obtain harmonious results for the two offices. In order to accomplish this, the census methods have been modified so as to agree with those of the Geological Survey. The totals for the two offices agree, with the exception of a few minerals for which the Geological Survey includes manufacturing processes carried on entirely distinct from the mining operations, and in a few instances where that office calls for the product marketed or sold instead of that produced or mined. Mining industries are frequently carried on by establishments engaged in both mining and manufacturing, and for statistical purposes it is often impossible to separate one operation from the other. The report on manufactures for the Twelfth Census includes the statistics for all products that could be considered as the results of manufacturing processes, and such products have, as far as possible, been excluded from this report.

The mining operations in the island of Porto Rico during 1902 were confined to production for local consumption, and it was impossible to secure reports on the schedules used for the canvass of continental United States. The statistics, therefore, are not included in this bulletin but have been published separately. No canvass was made of the gold mines of Alaska, as it was impossible to obtain satisfactory reports from the shifting mining population. The census statistics for that territory are, therefore, confined to two coal mines which were in operation during the year. The production of gold and silver from the Alaska fields for 1902 was reported by the Director of the Mint to be \$8,394,560. This figure has been accepted by the Bureau of the Census as correct, and will be presented in the total value of precious metals shown in the final report.

Very respectfully,



*S. A. North*  
Director.

Hon. GEORGE B. CORTELYOU,  
*Secretary of Commerce and Labor.*



# MINES AND QUARRIES.

This bulletin presents the statistics for all mines and quarries, and petroleum and natural gas wells, that were in operation during any portion of the calendar year ending December 31, 1902. The statistics are confined to the operations at the mine, quarry, or well, and such manufacturing as was incidental to and carried on in immediate connection therewith. The totals for the United States for all minerals are summarized in Table 1.

The differences in the extent to which the manufacturing processes have been included in the statistics of prior censuses interfere with the comparability of the

results; but in Table 2 these quantities and values reported for the Eleventh and Twelfth censuses have been reduced as nearly as possible to a comparative basis.

TABLE 1.—Summary: 1902.

Number of mines, quarries, and wells	151,516
Number of operators	46,858
Salaried officials, clerks, etc.:	
Number	88,128
Salaries	\$89,020,552
Wage-earners:	
Average number	581,728
Wages	\$369,369,960
Contract work	\$20,577,938
Miscellaneous expenses	\$71,771,718
Cost of supplies and materials	\$128,814,967
Value of product	\$796,826,417

TABLE 2.—COMPARATIVE SUMMARY—QUANTITIES AND VALUES OF MINERALS PRODUCED: 1889 AND 1902.

[The inclusion of the refined products for gold, silver, and other metals in this table has increased the value of products to \$884,040,869, an excess of \$87,214,452 over the \$796,826,417 reported as the value of the products of the mines, quarries, and petroleum and natural gas wells.]

MINERALS.	Unit of measure.	1902		1889	
		Quantity.	Value.	Quantity.	Value.
Total, all minerals			\$884,040,869		\$444,012,998
Antimony	Short tons		(1)	265	28,000
Asbestos	Short tons	2,505	46,200	80	1,800
Asphaltum and bituminous rock	Short tons	66,238	236,728	51,735	171,537
Barytes	Short tons	61,668	203,154	21,460	106,813
Bauxite	Long tons	29,222	128,206	*21	97,385
Borax	Short tons	19,142	2,388,614	\$4,000	\$500,000
Buhrstones and millstones	Stones	6,667	69,808	(4)	35,155
Cement	Barrels	24,656,860	24,268,338	*7,000,000	*5,000,000
Clay	Short tons	1,456,857	2,061,072	*329,665	*636,578
Coal, anthracite	Long tons	36,940,710	76,178,586	40,714,721	66,879,514
Coal, bituminous	Short tons	260,216,844	290,858,463	96,629,026	94,846,809
Copper <sup>2</sup>	Pounds	689,083,892	71,192,014	281,246,214	28,907,809
Corundum and emery	Short tons	4,251	104,605	2,246	106,565
Crystalline quartz	Short tons	15,104	48,085	(4)	(4)
Feldspar	Short tons	45,287	250,424	*17,806	*89,870
Flint	Short tons	36,866	144,269	*12,448	*49,137
Fluorspar	Short tons	48,813	275,682	9,500	45,886
Fuller's earth	Short tons	11,492	98,144	(4)	(4)
Garnet	Short tons	3,926	132,820	(4)	(4)
Gold, coining value <sup>3</sup>	Troy ounces	78,242,089	767,018,890	1,590,869	32,686,744
Graphite	Short tons	27,438	227,508	7,008	72,682
Grindstones and pulpstones	Short tons	55,657	667,481	(4)	489,597
Gypsum	Short tons	*681,683	2,089,341	267,769	764,118
Infusorial earth, tripoli, and pumice	Short tons	6,415	56,994	3,466	28,372
Iron ore	Long tons	35,567,410	65,465,321	14,518,041	83,351,978
Lead ore <sup>4</sup>	Short tons	889,126	18,181,013	181,141	6,467,137
Lithographic stone	Short tons	(10)	(10)	18	243
Limestones and dolomites			30,441,801		19,095,179
Lithium ore	Short tons	1,245	25,750	(4)	(4)
Manganese ore	Long tons	16,477	177,911	24,197	240,559
Marble			5,044,132		3,488,170
Marl	Short tons	12,439	12,741	156,265	69,956
Mica, sheet	Pounds	378,266	118,849	49,500	62,450
Scrap and waste	Short tons	1,400	360,885	113,184	11,483,766
Mineral pigments, crude	Pounds	802,000	64,160	(4)	(4)
Monazite			30,867,863		21,097,099
Natural gas	Short tons	3,876	113,968	2,991	82,980
Oilstones, whetstones, and scythestones	Pounds	(4)	(4)	50,000	2,500
Ozocerite, refined			89,275,802		71,897,789
Petroleum	Barrels	89,275,802	4,822,948	85,168,518	26,968,340
Phosphate rock	Long tons	1,548,720	4,822,948	550,245	2,887,776
Platinum and iridium	Troy ounces	1294	131,814	500	2,000
Precious stones			328,450		188,807
Quicksilver, crude	Short tons	11,727	1,550,090	2,750	(4)
Refined	Flasks	34,291	10,601,171	26,484	1,190,500
Sandstones and quartzites	Short tons	445,908	421,289	(4)	12,088,078
Silica sand			18,257,944		14,464,096
Siliceous crystalline rocks	Troy ounces	754,198,344	770,074,625	51,854,851	66,896,988
Silver, coining value <sup>5</sup>			5,698,051		3,482,513
Slate	Long tons	207,874	947,089	94,782	209,969
Sulphur and pyrite	Short tons	97,568	1,138,167	86,461	475,873
Talc and soapstone	Short tons	184	5,975	(4)	(4)
Tungsten	Short tons	3,810	48,125	(4)	(4)
Uranium and vanadium	Short tons	527,121	9,006,861	284,508	3,049,799
Zinc ore <sup>6</sup>	Short tons	3,586	49,256	3,151	73,000
All other minerals <sup>15</sup>	Short tons	3,586	49,256	3,151	73,000

<sup>1</sup> No production from domestic ores.  
<sup>2</sup> Aluminum, quantity reduced from 47,468 pounds.  
<sup>3</sup> No statistics other than production reported.  
<sup>4</sup> Not reported.  
<sup>5</sup> Copper contents of all ores mined.  
<sup>6</sup> Fine gold contents of auriferous ores and placer bullion.  
<sup>7</sup> Exclusive of Alaska.  
<sup>8</sup> Includes land plaster, calcined plaster, and crude gypsum.  
<sup>9</sup> Nonargentiferous lead ore, and lead contents of argentiferous and copper ores.

<sup>10</sup> No production.  
<sup>11</sup> Includes slate ground as a pigment, 2,000 long tons, value \$20,000.  
<sup>12</sup> Platinum only. Entire production obtained in placer mining and the refining of auriferous ores.  
<sup>13</sup> Fine silver contents of argentiferous ores and placer bullion.  
<sup>14</sup> Zinc ore and zinc contents of auriferous and argentiferous ores.  
<sup>15</sup> Includes for 1902, chrome ore, magnesite, molybdenum, nickel and cobalt, and rutile; for 1889, chrome ore, nickel and cobalt, and rutile.

The reports for each census since 1850 have included statistics for mines and quarries, but prior to the census of 1870 these statistics were so interwoven with those for manufactures that it is impossible to make a satisfactory segregation. At the censuses of 1870 and 1880 the canvass for the collection of mining statistics was so defective that the results can not be used for general comparisons to show the increase in all branches of mining. A complete canvass was made at the Eleventh Census, which covered the year 1889, but the results were not summarized nor were the data, except for the quantity and value of products, compiled on uniform lines so as to permit of a general comparison.

The only statement of the total number of employees, wages, and expenses for all branches of mining published at the Eleventh Census is contained in the following taken from the text of the report: "In all, 636,419 persons found employment directly in the mining industry, and depended upon this industry as their regular means of support. They received in wages \$265,290,643, or more than 52 per cent of the entire value of what they produced. In addition, the other expenditures aggregated \$115,874,135." In 1902 there were 38,128 salaried officials, and their salaries amounted to \$39,020,552. The average number of wage-earners employed during the entire year was 581,728, and they received in wages \$369,959,960. The miscellaneous expenses and cost of supplies and materials amounted to \$195,586,680. The products were valued at \$796,826,417. The products reported for 1889 amounted to \$587,230,662, but they include salt and other substances omitted from the mining census of 1902. Reducing the production to a comparative basis, as shown in Table 2, by including for 1902 the value of refined copper, gold, silver, lead, and zinc, and eliminating from 1889 the products not included in the mining census of 1902 makes the total for 1889 amount to \$444,012,998, as compared with \$884,040,869 for 1902, an increase of \$440,027,871, or 99.1 per cent. The number of persons who found employment directly in the mining industry at the Eleventh Census was evidently reported on a different basis from that used at this census. The value of products reported for 1902 are the amounts received by the mine operators and should not be confused with the value of metallic contents of the ore, such as iron, antimony, and nickel.

Such a large percentage of gold, silver, copper, lead, and zinc are often obtained from the same ores that it was impracticable to segregate their values and at the same time to present products which would be in any degree harmonious with the employees, wages, and expenses incident to their production. The quantity and value of these metals are not definitely determined until the ore has been smelted. Smelting is a manufacturing process and therefore omitted from the mining census, but the metallic contents of the ore and bullion produced during the year 1902 and the gross value of the same as computed from the reports to the Bureau of the Census

were: Gold, 3,242,039 ounces, valued at \$65,628,906; silver, 54,198,344 ounces, valued at \$27,282,107; copper, 639,033,392 pounds, valued at \$71,192,014; lead, 338,125 short tons, valued at \$18,181,013; zinc, 527,121 short tons, valued at \$9,006,361. These are the values at the mines. Gold and silver were reported at the Eleventh Census in troy ounces and coining value. Computed on the same basis, the production for 1902 amounted to 3,242,039 ounces of gold, valued at \$67,018,890, and 54,198,344 ounces of silver, valued at \$70,074,625. The Director of the Mint reports the production of gold for the United States, exclusive of Alaska, for the calendar year 1902 as 3,466,270 ounces, valued at \$71,654,200, and the production of silver as 55,408,000 ounces, valued at \$71,638,625. The disparity in these results is due to the fact that the Bureau of the Census collected the data directly from the mines and the Director of the Mint obtained the information from mints, assay offices, private refineries, and other reliable sources. The quantities and values reported by the Director of the Mint represent the refined product, a portion of which may have been mined during the preceding year, and, as a portion of the product reported by the Census Bureau as mined during 1902 would be included in the report of the Director of the Mint for the following year, the totals for the two offices for the same year can not agree.

The increase that has occurred in the production of the different minerals during the thirteen years covered by Table 2 is referred to in the discussion of the statistics for each mineral on pages 19 to 41.

No statistics for employees, wages, or expenses incident to the production of cement, clay, feldspar, flint, rutile, borax, or slate ground as a pigment, are given in the report of the Eleventh Census, and the production given in Table 2 for these minerals was taken from the summary of the mineral products of the United States which was apparently prepared in part independently of the regular census work, but which was presented in the introduction to the report.

The Eleventh Census did not present statistics of any character for crystalline quartz, fuller's earth, lithium, monazite, tungsten, uranium and vanadium, magnesite, or molybdenum, these minerals not being produced in commercial quantities. Silica sand is generally the product of sandstone quarries, being obtained by crushing the rock, and was included under the classification of sandstones. Garnet was included under abrasives.

The statistics are presented separately for minerals or products, but in some cases two or more of the products were obtained from the same mine or quarry, and it was impracticable to separate the employees, wages, and expenses incident to the production of each. For instance, if a mine yielded both silver and copper, the latter being of the greater value, the report was assigned to "copper," and all of the employees, wages, and expenses were included in the totals for that mineral. If the product of a quarry was sandstone, the report

was classified as "sandstones and quartzites," though some of the product may have been manufactured into and sold as grindstones or oilstones. In order to avoid duplication, the by-products, when they form the finished product of the mine or quarry, are added to the classification to which they properly belong. The

following statement gives the quantity and value of the by-products that it was possible to segregate, the names of the classifications to which they were added, also the classification under which the employees, wages, and expenses incident to their production are included:

BY-PRODUCT.	PRODUCTION.			Classification to which by-product should be added to obtain a total that is comparable with employees, wages, and expenses.
	Quantity.		Value.	
	Unit of measure.	Amount.		
Barytes	Short tons	539	\$1,618	Lead and zinc ore. Siliceous crystalline rocks. Limestones and dolomites. Limestones and dolomites. Flint. Feldspar. Sandstones and quartzites. Talc and soapstone. Barytes. Coal, bituminous. Cement. Sandstones and quartzites. Limestones and dolomites. Slate. Petroleum. Sandstones and quartzites. Grindstones and pulpstones. Natural gas. Limestones and dolomites. Grindstones and pulpstones. Sandstones and quartzites. Coal, bituminous.
Buhrstones and millstones	Stones	100	1,425	
Cement			18,149	
Clay			400	
Feldspar	Short tons	112	1,000	
Flint	Short tons	1,254	2,598	
Grindstones and pulpstones	Short tons	35,503	408,066	
Infusorial earth, tripoli, and pumice	Short tons	175	1,496	
Lead and zinc ore	Pounds	1,625,818	37,212	
Limestones and dolomites			896	
Limestones and dolomites			124,687	
Limestones and dolomites			5,100	
Marble			8,458	
Mineral pigments, crude			525	
Natural gas			108,112	
Oilstones, whetstones, and scythestones	Short tons	180	8,872	
Oilstones, whetstones, and scythestones	Short tons	595	29,740	
Petroleum	Barrels	1,520	1,870	
Sandstones and quartzites			1,278	
Sandstones and quartzites			510	
Silica sand			50,811	
Sulphur and pyrite	Long tons	11,483	29,420	

The statistics for the census of 1902 are presented in detail in Tables 90 and 91, and the totals are summarized by states in the following table:

TABLE 3.—SUMMARY, BY STATES AND TERRITORIES: 1902.

STATE OR TERRITORY.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Amount paid for contract work.	Miscellaneous expenses.	Cost of supplies and materials.	Value of product.
			Number.	Salaries.	Average number.	Wages.				
United States	151,516	46,858	38,128	\$39,020,552	581,728	\$369,959,960	\$20,677,988	\$71,771,713	\$128,814,967	\$796,826,417
Alabama	260	172	947	979,117	19,182	10,345,148	267,279	858,851	2,048,914	17,867,992
Arizona	118	158	445	710,188	5,828	5,059,065	159,942	392,495	3,060,521	11,197,375
Arkansas	120	181	210	191,528	2,944	1,945,479	860	95,481	244,879	2,840,841
California	4,087	1,552	1,432	1,887,860	12,964	11,050,666	520,894	1,788,790	5,678,755	28,870,406
Colorado	1,147	1,011	1,898	2,663,388	20,519	18,874,886	398,985	3,082,544	7,006,846	40,608,286
Connecticut	90	78	151	182,095	1,497	808,772		59,918	236,075	1,425,959
Delaware	12	12	29	28,047	504	222,622		39,278	45,361	448,467
Florida	71	46	218	228,868	3,146	1,082,080		804,142	618,057	2,948,806
Georgia	149	127	304	209,281	2,820	1,085,047	122,619	231,145	566,067	3,117,858
Idaho	292	290	354	576,690	8,563	3,908,504	43,442	636,409	1,626,158	8,214,671
Illinois	1,116	1,013	1,869	1,910,940	40,523	26,986,397	26,016	1,548,908	3,515,838	38,234,410
Indian Territory	79	89	260	258,171	4,814	3,188,322	78,639	366,382	4,821,380	
Indiana	16,825	3,909	1,662	1,490,588	16,478	10,729,767	2,164,880	3,887,668	8,810,666	28,224,760
Iowa	625	589	610	500,125	10,437	6,791,161	48,106	878,252	961,996	9,676,424
Kansas	1,259	898	555	527,242	8,726	5,680,598	218,182	767,069	1,374,585	10,700,285
Kentucky	1,142	665	854	666,360	10,654	5,193,792	224,923	600,618	1,207,771	8,538,428
Louisiana	8	8	8	7,583	61	34,444	105,868	25,820	7,864	279,327
Maine	135	141	206	198,814	3,684	2,284,789		121,556	476,964	3,656,134
Maryland	232	209	398	465,665	6,826	4,323,939		488,170	859,755	8,117,712
Massachusetts	251	284	360	309,978	4,242	2,525,405	1,853	273,791	762,835	4,671,855
Michigan	203	146	1,585	1,840,182	31,951	20,108,616	77,047	3,869,461	9,841,409	50,157,858
Minnesota	176	255	675	577,836	9,760	6,391,184	389,244	4,242,654	2,868,840	25,729,545
Missouri	1,045	973	1,488	1,233,811	15,351	8,757,367	172,514	2,118,436	2,869,018	20,284,056
Montana	281	271	571	912,477	10,589	11,812,150	64,686	898,258	5,007,102	28,285,085
Nebraska	36	35	12	8,001	178	95,985		2,790	11,178	148,391
Nevada	114	121	146	222,098	1,182	1,205,565		177,355	623,457	3,518,430
New Hampshire	56	62	92	68,971	1,258	806,494		26,998	184,128	1,176,312
New Jersey	162	151	420	387,000	5,645	2,658,727	10,770	308,669	2,235,964	6,605,402
New Mexico	161	207	175	209,569	2,275	1,646,838	48,881	140,055	497,949	2,686,473
New York	9,768	2,921	791	788,382	9,560	5,099,753	355,113	1,276,282	3,002,564	13,850,421
North Carolina	126	137	120	84,224	1,556	517,765	9,000	76,842	118,782	927,376
North Dakota	48	48	52	43,980	298	196,584	2,795	23,012	88,867	334,967
Ohio	44,984	11,338	2,580	2,551,083	37,173	23,222,680	2,701,557	7,711,026	10,126,452	57,186,922
Oklahoma	21	17	18	12,228	128	64,545		15,830	31,894	186,706
Oregon	294	298	158	189,103	1,166	1,038,075	19,522	148,748	408,112	2,067,389
Pennsylvania	48,672	12,266	9,868	9,592,910	190,985	114,122,437	5,598,074	28,218,856	38,111,908	236,871,417
Rhode Island	22	22	56	56,150	667	435,224		25,938	85,127	774,611
South Carolina	88	42	148	126,992	2,694	891,787		109,890	842,379	1,834,134
South Dakota	77	77	167	242,461	3,131	3,374,776		8,349	1,992,575	6,769,104
Tennessee	241	208	773	664,379	10,890	4,864,241	174,496	720,483	850,485	9,538,782
Texas	1,067	308	1,210	664,802	3,853	2,261,639	1,887,795	923,769	1,051,457	6,961,582
Utah	178	170	413	587,005	5,712	5,089,132	37,054	761,557	1,836,658	12,378,850
Vermont	192	160	483	378,077	5,898	3,114,399		382,784	1,076,143	5,804,705
Virginia	192	140	700	546,204	8,938	3,458,450	36,964	608,290	923,387	6,607,807
Washington	90	84	258	328,289	4,567	3,735,484	29,600	225,161	615,807	5,898,659
West Virginia	14,874	5,192	2,614	2,448,150	30,002	17,409,826	5,194,279	7,468,846	8,519,767	48,378,414
Wisconsin	411	392	275	232,758	3,563	1,937,565		427,847	804,142	4,427,813
Wyoming	74	50	153	188,616	4,486	3,482,059	15,547	280,602	818,496	5,684,286

<sup>1</sup> Includes 2 operators in Alaska and 1 in Hawaii.



Pennsylvania was the leading mining state, both in the number of wage-earners employed and in the value of products. Its high rank was due largely to the production of anthracite and bituminous coal, the wage-earners reported for the coal mines forming 84.7 per cent of the 190,935 reported for all mines in the state, and the products of such mines 76.9 per cent of the total product. Its high rank in the number of mines was due to the inclusion of the petroleum and natural gas wells, of which there were 45,852, which formed 94.2 per cent of the 48,672 mines returned for all minerals.

Ohio held second position in value of products, the total for the state being \$57,186,922, of which amount the products of coal mines formed \$26,953,789, or 47 per cent. It ranked third in number of wage-earners, the coal mining giving employment to 25,963, or 69.9 per cent of the 37,173 wage-earners reported for the state.

Illinois held the second rank in the number of wage-earners, the average for the year being 40,523. This state held sixth place in the value of products, being outranked by Pennsylvania, Ohio, Michigan, West Virginia, and Colorado, in the order named.

Michigan ranked third in the value of products and fourth in number of wage-earners. The iron mines of the state gave employment to 14,456, or 45.2 per cent of the wage-earners, and their products formed \$26,695,860, or 53.2 per cent of the total value of products.

West Virginia ranked fourth in value of products and fifth in number of wage-earners. The coal mines of the state gave employment to 23,914, or 79.7 per cent of the wage-earners, and their products formed \$24,748,658, or 51.1 per cent of the total value of all products.

The state of California, which ranked seventh in the value of products, held the first position in diversification of minerals. As shown by Table 91, of the 52 different classifications of minerals mined in the United States, 26 were reported for the state during the year 1902. Virginia ranked second in this regard, reporting 24 classes of minerals, and New York and Pennsylvania hold third position, each reporting 23 of the different classes of minerals.

Accepting the census of 1900 for manufactures and agriculture and the census of mines and quarries of 1902 as representing conditions at the beginning of the twentieth century, the total gross value of the products of productive industry, exclusive of fisheries, amounted to \$18,575,224,735. Of this amount manufactures formed \$13,039,279,566, or 70.2 per cent; agriculture \$4,739,118,752, or 25.5 per cent; and mining \$796,826,417, or 4.3 per cent.

The combination of mining and manufacturing by the use of the same capital, wages, expenses, etc., has been accentuated by the consolidation of industrial enterprises, and it is impossible, in many instances, to

segregate the statistics so as to show the true totals for each branch of industry. If the statistics for mining and manufacturing were to be taken together, it would be easy to find a common term for this union and comparatively simple to show the aggregate figures, but such a combination would not be a compliance with the act of Congress of March 6, 1902, which provides for mines, mining, quarries, and minerals as a distinct class of census work. Theoretically, a perfect mining census should terminate with the delivery of the ore or crude rock at the mine or quarry, but in many cases the employees work indiscriminately in both branches of industry, and no value is placed on the ore as it leaves the mine. Where the milling, separating, washing, burning, calcining, or other forms of reduction or manufacture were performed at the mine or quarry, the census of mines for 1902 includes, as a rule, the employees and the expenses involved in the entire work of the establishment. But the absence of uniformity in this respect at prior censuses makes it impossible to prepare satisfactory comparative statistics for a number of the important minerals.

The Twelfth Census of manufactures includes in a number of instances the mining and quarrying operations which are incident to such manufacturing as smelting and refining of ores, the manufacture of monuments, tombstones, etc. The statistics for the two branches of industry are, therefore, to some extent duplicated. The totals, however, are presented in the following table:

TABLE 4.—Mining and manufactures: 1900 and 1902.

	Total.	Mining 1902.	Manufactures 1900.
Number of establishments .....	664,250	151,516	512,734
Salaries, officials, clerks, etc.:			
Number .....	435,876	38,128	397,748
Salaries .....	\$443,873,390	\$39,020,552	\$404,852,838
Wage-earners:			
Average number .....	5,908,117	581,728	5,321,389
Wages .....	\$2,700,537,970	\$369,959,960	\$2,330,578,010
Miscellaneous expenses .....	\$1,100,680,624	\$71,771,713	\$1,028,908,911
Supplies and materials .....	\$7,484,808,385	\$123,814,967	\$7,360,993,418
Value of product .....	\$13,836,106,983	\$796,826,417	\$13,039,279,566

<sup>1</sup> Number of mines, quarries, and wells.

The cessation of work in the anthracite coal industry for a number of months during 1902 tends to reduce the value of the statistics for the mining census as representing conditions during a normal year, but with this exception the totals may be accepted as showing the aggregate importance of the two industries during a period of twelve months and the proportion which each contributes to this aggregate. The table indicates that the kindred industries of mining and manufacturing, which include the mechanical industries, gave employment, on the average during the year to 6,338,993 persons, and paid \$3,144,411,360 in salaries and wages. Of this total the salaried officials numbered 435,876, or 6.9 per cent, and the wage-earners 5,903,117, or 93.1 per cent. The mining industries contributed 9.8 per

cent of the number and 13.1 per cent of the wages and salaries, respectively, and the manufacturing and mechanical industries 90.2 and 86.9 per cent, respectively. Of the \$13,836,105,988 reported as the gross value of products, mining contributed 5.8 per cent and manufactures 94.2 per cent.

Table 3 shows the contribution of each state to the total for the United States. The corresponding statistics for each mineral are shown in Table 90. The development of the deposits of the principal minerals,

such as coal, iron, copper, lead, and those carrying the precious metals, has been the principal factor in the increase in the number of people employed in the mining industries, and in the value of the products. The increase in the diversification of the mineral products is due to the production of a greater number of the minor minerals. The comparative importance of the principal minerals, as determined by the percentages that the totals for each are of the aggregate of all, is shown in the following table:

TABLE 5.—SUMMARY FOR PRINCIPAL MINERALS AND PERCENTAGE EACH IS OF TOTAL: 1902.

	Number of mines, quarries, and wells.	Number of operators.	WAGE-EARNERS.		Supplies and materials and miscellaneous expenses.	Value of product.
			Average number.	Wages.		
United States .....	151,516	46,858	581,728	\$369,959,960	\$195,586,680	\$796,826,417
Coal, anthracite and bituminous .....	5,986	4,528	350,329	\$220,196,401	\$68,621,400	\$367,032,069
Per cent of total .....	3.9	9.6	60.2	59.5	32.5	46.1
Copper ore .....	144	144	26,007	\$21,151,406	\$12,480,640	\$51,178,036
Per cent of total .....	0.1	0.3	4.5	5.7	6.4	6.4
Gold and silver .....	2,992	2,992	36,142	\$36,077,492	\$22,057,297	\$82,482,052
Per cent of total .....	2.0	6.4	6.2	9.8	11.3	10.4
Iron ore .....	525	332	38,851	\$21,581,792	\$17,268,322	\$65,465,321
Per cent of total .....	0.8	0.7	6.7	5.8	8.8	8.2
Lead and zinc ore .....	559	557	7,881	\$4,829,271	\$4,608,658	\$14,600,177
Per cent of total .....	0.4	1.2	1.4	1.2	2.4	1.8
Petroleum and natural gas .....	134,477	31,489	22,230	\$16,178,640	\$46,112,750	\$102,265,602
Per cent of total .....	88.8	67.2	3.8	4.4	23.6	12.8
Stone <sup>1</sup> .....	5,764	5,470	71,156	\$67,515,907	\$14,716,601	\$70,462,498
Per cent of total .....	3.8	11.7	12.2	10.1	7.5	8.9
All other minerals .....	1,069	1,346	29,132	\$12,977,052	\$14,731,012	\$48,340,722
Per cent of total .....	0.7	2.9	5.0	3.5	7.5	5.4

<sup>1</sup> Includes limestones and dolomites, marble, sandstones and quartzites, siliceous crystalline rocks, slate, and silica sand.

Table 5 develops the fact that the production of a comparatively few minerals gave employment to a large proportion of the employees, and the value of their products formed a large proportion of the totals reported for all minerals. The anthracite and bituminous coal mines gave employment to more than half of the total number of wage-earners, and their products formed almost half the total value of products.

The seven groups of minerals for which statistics are separately presented in this table gave employment to 95 per cent of the wage-earners, and their products formed 94.6 per cent of the value of the products for all minerals. The minerals in the remaining classifications, for which statistics are shown in Table 90, were comparatively unimportant in so far as the number of persons employed and the value of products are concerned.

Eliminating the petroleum and natural gas wells there are only 17,039 mines and quarries reported for all classes of minerals, but they gave employment to 559,498 wage-earners and their annual wages amounted to \$353,781,320, while their products were valued at \$694,560,815.

#### NUMBER OF MINES AND OPERATORS.

The mineral products of the United States for the year 1902 were obtained from 151,516 mines, quarries, and petroleum and natural gas wells that were in opera-

tion during all or part of that year. These mines, quarries, and wells were controlled by 46,858 operators.

The term "mine" represents a distinct mining operation, one or more of which may be controlled by the same operator, but in some minerals, such as precious stones, small placer gold mining, and monazite, the mining operations in many instances are not carried on continuously at the same locality, and it is impossible to ascertain the number of distinct operations. The term "operator" represents the individual, company, or corporation that controls the mine. The distinct mining operations under the control of the same operator and located in the same county were included in one report to the Bureau of the Census or in separate reports to suit the convenience of the operator, but if the distinct operations were situated in different counties separate reports were made for each county.

The census aims to cover all mines and quarries, both large and small, irrespective of the character or value of the products. There are, however, in some branches of mining, a number of irregular producers operating independently, who work at such times as they feel inclined or as much as is sufficient to obtain a product that will satisfy the local demand. Some of these small operators work the same digging from time to time, while others, such as the placer gold and monazite miners, work in different localities, selected with reference to the richness of the deposits. It is impossible

to secure census reports from all operators of this class. Special agents visited every section of the United States and made diligent inquiry for mines and quarries, securing reports from all that were known to be in existence. The work of these agents was supplemented by carefully prepared lists, giving the names and addresses of commercial mines, and every precaution was taken to make a thorough canvass. The number of mines is largely increased by the inclusion of the petroleum and natural gas wells, and the small bituminous coal operators which predominate in the North Atlantic and the North Central states. The 126,103 mines, quarries, and wells reported for these states constituted 83.2 per cent of the total for the United States.

The mines and operators reported for the seven principal minerals given in Table 5 represent 99.3 and 97.1 per cent, respectively, of the totals for all minerals. Eliminating the petroleum and natural gas wells there remain 17,039 mines and quarries and 15,369 operators, and of this number 12,759, or 75 per cent, of the mines and 11,288, or 73 per cent, of the operators are reported for anthracite and bituminous coal, stone, abrasives of all varieties, and other nonmetallic substances. The remaining 4,280 mines, representing only 25 per cent of the aggregate, were metal mines. The following table shows separate totals for the mining industries divided into these two broad groups of metallic and nonmetallic products:

TABLE 6.—*Metallic and nonmetallic products: 1902.*

	Total.	CLASS OF PRODUCTS.	
		Metallic.	Nonmetallic.
Number of mines.....	151,516	4,280	147,236
Number of operators.....	46,858	4,061	42,777
Salaried officials, clerks, etc.:			
Number.....	38,128	8,138	29,990
Salaries.....	\$39,020,552	\$9,948,385	\$29,072,217
Wage-earners:			
Average number.....	561,728	110,404	471,324
Wages.....	\$369,959,960	\$34,046,224	\$285,913,786
Contract work.....	\$20,677,988	\$1,371,921	\$19,306,017
Miscellaneous expenses.....	\$71,771,713	\$17,168,821	\$54,603,892
Cost of supplies and materials.....	\$128,814,967	\$39,639,708	\$84,175,264
Value of product.....	\$796,826,417	\$216,453,587	\$581,372,830

The statistics for the separate substances composing the totals for the two classes of products given in Table 6, are shown in Table 90. Less than one-tenth of the mine operators of the country were engaged in the production of ores and their mines gave employment to less than one-fourth of the wage-earners, the value of their products being less than one-third of the total value of products.

## EMPLOYEES AND WAGES.

The classes of employees for which the number and salaries and wages were reported are shown in Table 7. The average number of persons employed during the entire year was called for, and the average number of wage-earners employed during each month that the

mine was in operation, also the average number employed at stated daily rates of pay, and the total number of days the mine was in operation during the year. If the mining or quarrying was paid for by the ton, car, yard, or other unit, the average number of employees engaged in such work was reported together with the total amount paid. The amount paid for contract work when done by employees not hired directly by the company was returned as a separate item. The statistics for the number of employees during the year and the amounts paid in salaries and wages are summarized in the following table:

TABLE 7.—*Employees by classes: 1902.*

Salaried officials, clerks, etc.:	
Total number.....	38,128
Total salaries.....	\$39,020,552
General officers—	
Number.....	4,591
Salaries.....	\$8,218,541
Superintendents, managers, foremen, surveyors, etc.—	
Number.....	15,588
Salaries.....	\$16,666,416
Foremen below ground—	
Number.....	6,863
Salaries.....	\$6,208,307
Clerks—	
Number.....	11,186
Salaries.....	\$7,927,288
Wage-earners:	
Aggregate average number.....	561,728
Aggregate wages.....	\$369,959,960
Above ground—	
Total average number.....	221,505
Total wages.....	\$126,086,580
Engineers, firemen, machinists, blacksmiths, carpenters, and other mechanics—	
Average number.....	60,859
Wages.....	\$44,478,246
Miners, quarrymen, and stonecutters—	
Average number.....	67,129
Wages.....	\$33,971,290
Boys under 16 years—	
Average number.....	6,219
Wages.....	\$1,339,478
All other wage-earners—	
Average number.....	87,298
Wages.....	\$45,297,516
Below ground—	
Total average number.....	360,223
Total wages.....	\$244,873,480
Miners—	
Average number.....	257,301
Wages.....	\$184,674,198
Miners' helpers—	
Average number.....	18,786
Wages.....	\$11,496,910
Boys under 16 years—	
Average number.....	5,638
Wages.....	\$1,548,869
All other wage-earners—	
Average number.....	78,548
Wages.....	\$47,153,438

As in the statistics for manufactures at the Twelfth Census, the object of the inquiry concerning the number of wage-earners in the mining census has been to obtain an average which would represent the number that would be required to perform the work if constantly employed throughout the entire year. This method differs very materially from that used at the Eleventh Census, which was apparently intended to show the average number employed for the time each mine was in operation.<sup>1</sup>

The employees shown in Table 7 may be arranged in two groups; first, the office force, which consisted of 15,727 general officers and clerks, receiving \$16,145,829 as salaries, the number and salaries forming 2.5 and 3.9 per cent, respectively, of the totals for all employees; second, the employees engaged in supervising and in

<sup>1</sup> For a more detailed explanation of the method and the reasons for its adoption, see Twelfth Census, Vol. VII, Report on Manufactures, Part I, pages cvi ff.

the actual work of the mines and quarries, which include the superintendents, managers, foremen, surveyors, etc., as well as the mechanics, and the miners and their helpers and all other wage-earners. This class numbers 604,129, and their salaries and wages amounted to \$392,834,683, forming 97.5 and 96.1 per cent, respectively, of the totals. The superintendents, managers, foremen, and surveyors are classed as salaried officials in Table 7, though the distinction between foremen and miners is difficult to preserve, especially when there is very little, if any, difference in their wages. Exclusive of the general officers and clerks, 237,043, or 38.2 per cent of the total number of employees were engaged in operations above ground, and the salaries and wages paid for such work amounted to \$141,752,946, or 34.7 per cent of the total. The employees reported as engaged below ground number 367,086, or 59.2 per cent, and their salaries and wages amounted to \$251,081,737, or 61.2 per cent of the total. The separation of employees so as to show the number working above and below ground can not be accepted as exact, because the same employees may, at different times, work in both places, and in some classes of mining the distinction between the two branches of work is not preserved uniformly. From Table 90 it appears that employees working below ground are reported for the majority of the minerals; but of the total number of such employees 358,843, or all but 8,243, were employed in the mining of coal, iron, copper, gold, and silver, and the salaries and wages they received amounted to \$246,648,909, or all but \$4,432,828 of the total salaries and wages paid for work below ground. The miners, miners' helpers, quarrymen, and stonecutters, who may be accepted as the employees engaged in the actual work of removing the ore or mineral, and dressing the stone at the quarry, number 343,166, or 58.9 per cent of the total number of wage-earners, and their wages amount to \$230,142,393, or 62.2 per cent of the total wages.

The detailed statistics for the average number of wage-earners employed each month, shown in Table 90, are summarized in the following table:

TABLE 8.—Average number of wage-earners employed each month: 1902.

	Total.	Men 16 years and over.	Boys under 16 years.
Yearly average.....	581,728	569,871	11,857
January.....	605,802	590,362	15,440
February.....	602,685	587,181	15,464
March.....	611,026	595,413	15,613
April.....	620,166	604,359	15,807
May.....	566,870	556,464	10,406
June.....	525,464	518,197	7,267
July.....	516,870	509,596	7,274
August.....	528,582	521,089	7,443
September.....	587,483	579,932	7,501
October.....	575,796	566,591	9,206
November.....	646,922	631,639	15,283
December.....	648,220	627,629	15,591

The greatest number, 646,922, were employed in November. Exclusive of the coal mines, the greatest activity in the mining industries was during the summer months, the largest number being employed in August. The largest number were employed in the coal mines during December, but the strike in the anthracite coal region continued from May to October and greatly reduced the number employed during that period. The number employed each month in the production of the different minerals shown in Table 90 indicates that in some branches of mining the operations were comparatively constant during the year, while in others the number employed varied widely, being affected by seasonal changes or by other influences. Of the minerals of considerable importance, the production of clay appears to have been carried on with the greatest degree of regularity, the number employed varying only from 2,658 in June to 2,128 in February, while the number employed in the production of anthracite coal varied from 119,228 reported for February to 6,552 in July.

The distribution of wage-earners according to daily rates of pay is shown in the following table for each mineral in the production of which more than 2,000 wage-earners were employed on the average during 1902:

TABLE 9.—AVERAGE NUMBER OF WAGE-EARNERS AT SPECIFIED DAILY RATES OF PAY. BY PRINCIPAL MINERALS: 1902.

RATES PER DAY (DOLLARS).	All minerals.	Cement.	Clay.	COAL.		Copper.	Gold and silver.	Iron ore.	Lead and zinc.	Limestones and dolomites.	Marble.	Natural gas.	Petroleum.	Phosphate rock.	Sandstones and quartzites.	Siliceous crystalline rocks.	Slate.	All other minerals.
				Anthracite.	Bituminous.													
Total.....	581,728	13,041	2,433	69,691	280,638	26,007	36,142	88,851	7,881	31,547	4,070	4,678	17,552	5,971	10,448	18,836	5,920	8,022
Less than 0.50.....	588	37	11	70	117	.....	4	141	5	16	6	.....	1	52	4	37	7	30
0.50 to 0.74.....	4,677	20	44	2,459	1,139	29	54	279	14	196	17	2	1	89	40	133	72	89
0.75 to 0.99.....	11,054	192	380	3,808	2,720	49	234	853	7	889	61	11	4	1,288	60	578	101	374
1.00 to 1.24.....	33,503	1,099	494	6,546	8,084	201	369	4,618	165	4,128	558	28	74	3,656	292	1,282	290	1,621
1.25 to 1.49.....	45,101	3,849	371	8,495	11,928	368	218	2,874	1,371	7,870	933	248	61	378	1,195	2,096	983	1,318
1.50 to 1.74.....	78,102	4,107	322	10,712	32,084	1,847	238	5,468	2,058	9,195	858	1,230	699	250	2,487	3,546	1,145	1,916
1.75 to 1.99.....	75,554	1,632	89	11,547	36,797	3,854	580	7,344	683	4,944	286	873	1,078	25	1,796	8,045	658	823
2.00 to 2.24.....	110,689	983	121	8,159	70,909	6,277	1,180	8,585	2,901	2,687	296	1,090	1,408	101	2,215	2,483	1,369	683
2.25 to 2.49.....	73,665	427	65	7,253	48,609	2,066	733	4,862	788	885	182	558	10,046	33	494	692	671	261
2.50 to 2.74.....	52,837	433	68	3,132	32,454	2,285	5,527	2,511	309	580	294	326	2,366	55	446	1,141	349	561
2.75 to 2.99.....	24,446	103	7	1,819	15,814	661	2,884	630	26	198	159	72	242	3	259	1,364	161	49
3.00 to 3.24.....	31,577	125	10	1,806	12,088	961	12,166	454	143	218	130	67	859	21	654	1,608	105	212
3.25 to 3.49.....	10,733	47	1	1,382	6,370	131	1,614	77	10	114	82	8	277	.....	110	480	4	26
3.50 to 3.74.....	20,324	7	.....	1,317	4,402	6,742	6,873	125	4	121	57	28	39	4	314	199	4	26
3.75 to 3.99.....	2,397	19	.....	517	1,324	54	345	7	1	1	4	37	32	8	26	23	.....	10
4.00 to 4.24.....	4,214	7	.....	167	495	605	2,564	30	1	58	15	34	25	5	86	125	.....	7
4.25 and over.....	2,317	4	.....	502	404	377	474	43	.....	4	105	66	289	8	30	9	1	1

The production of the minerals for which separate statistics are given in Table 9 gave employment to 573,706 wage-earners, the number forming 98.6 per cent of the 581,728 wage-earners reported for all classes of minerals.

Of the various minerals for which statistics are shown separately in the above table the production of anthracite and bituminous coal gave employment to the greatest number of wage-earners. A large number of the miners in the coal mines were paid according to the quantity of their product, and some of the principal coal companies were unable to classify these employees according to the specified daily rates of pay. When data of this character was not reported by the company it was estimated in the Census Bureau from the total number of such employees reported, the total amount of wages paid, and the number of days that the mine was in operation, the rate being determined by the average daily earnings for the time employed and the

average number for the entire year being computed as previously explained; therefore, in such cases, all employees of a mine who were paid by the piece or quantity of work done as measured by their output were estimated as receiving a uniform daily rate of pay. There were 230,846 employees reported as the average number receiving wages according to the quantity of their production, and they were paid \$155,578,988. Of this number, 211,710, or 91.7 per cent, were reported for anthracite and bituminous coal, and they received \$144,628,436, or 93 per cent of the amount paid for such mining in all minerals.

The number employed in the different occupations is an important factor to be considered in connection with these statistics, and the following table summarizes the returns for all minerals so as to show the average number receiving stated daily rates of pay in each occupation and the percentage which the number at each rate forms of the total number in the class:

TABLE 10.—AVERAGE NUMBER OF WAGE-EARNERS, AND PER CENT OF TOTAL NUMBER, AT SPECIFIED DAILY RATES OF PAY, BY OCCUPATIONS: 1902.

RATES PER DAY (DOLLARS).	ALL OCCUPA- TIONS.		ENGINEERS. <sup>1</sup>		FIREMEN.		MACHINISTS, BLACKSMITHS, CARPENTERS, AND OTHER ME- CHANICS.		MINERS, QUAR- RYMEN, AND STONECUTTERS.		MINERS' HELP- ERS.		TIMBERMEN AND TRACK LAYERS.		BOYS UNDER 16 YEARS.		ALL OTHER WAGE-EARNERS.	
	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.	Average number.	Per cent.
Total .....	581,728	100.0	26,249	100.0	8,740	100.0	25,870	100.0	824,430	100.0	18,736	100.0	13,544	100.0	11,857	100.0	152,302	100.0
Less than 0.50 .....	588	0.1	1	( <sup>2</sup> )	.....	.....	.....	.....	29	( <sup>2</sup> )	.....	.....	.....	.....	447	3.8	61	( <sup>2</sup> )
0.50 to 0.74 .....	4,677	0.8	6	( <sup>2</sup> )	6	0.1	8	( <sup>2</sup> )	222	0.1	26	0.1	1	( <sup>2</sup> )	3,448	29.1	960	0.6
0.75 to 0.99 .....	11,064	1.9	23	0.1	50	0.6	174	0.7	2,832	0.9	252	1.4	46	0.8	4,062	34.2	3,615	2.4
1.00 to 1.24 .....	33,503	5.8	278	1.1	281	3.2	400	1.6	14,976	4.6	1,190	6.4	209	1.6	3,212	27.1	12,960	8.5
1.25 to 1.49 .....	45,101	7.8	569	2.2	676	7.7	798	3.1	18,908	5.8	2,004	10.7	381	2.8	419	3.5	21,351	14.0
1.50 to 1.74 .....	78,102	13.4	1,264	4.8	1,646	18.8	2,333	9.0	36,569	11.3	2,599	18.9	1,119	8.3	130	1.1	32,442	21.3
1.75 to 1.99 .....	75,564	13.0	1,813	6.9	2,422	27.7	2,899	11.2	37,492	11.6	3,692	19.7	2,102	15.5	61	0.5	25,073	16.5
2.00 to 2.24 .....	110,689	19.0	3,884	14.8	1,945	22.3	5,155	19.9	65,307	20.1	3,021	16.1	3,778	27.9	56	0.5	27,543	18.1
2.25 to 2.49 .....	78,665	12.7	11,500	43.8	457	5.2	3,916	15.1	39,895	12.3	1,907	10.2	3,640	26.9	22	0.2	12,328	8.1
2.50 to 2.74 .....	52,887	9.1	3,546	13.5	562	6.4	3,153	12.2	36,721	11.3	1,429	7.6	954	7.0	.....	.....	6,472	4.3
2.75 to 2.99 .....	24,446	4.2	607	2.3	111	1.3	1,185	4.6	19,446	6.0	488	2.6	312	2.3	.....	.....	2,297	1.5
3.00 to 3.24 .....	31,577	5.4	1,101	4.2	244	2.8	2,151	8.3	22,197	6.9	1,186	6.3	399	3.0	.....	.....	4,299	2.8
3.25 to 3.49 .....	10,735	1.8	186	0.7	20	0.2	597	2.3	8,854	2.7	392	2.1	59	0.4	.....	.....	625	0.4
3.50 to 3.74 .....	20,324	3.5	452	1.7	267	3.1	1,021	4.0	16,094	5.0	541	2.9	456	3.4	.....	.....	1,493	1.0
3.75 to 3.99 .....	2,397	0.4	89	0.3	6	0.1	137	0.5	2,078	0.6	5	( <sup>2</sup> )	26	0.2	.....	.....	56	( <sup>2</sup> )
4.00 to 4.24 .....	4,214	0.7	762	2.9	38	0.4	1,144	4.4	1,750	0.5	4	( <sup>2</sup> )	57	0.4	.....	.....	459	0.3
4.25 and over .....	2,317	0.4	178	0.7	9	0.1	799	3.1	1,063	0.3	.....	.....	5	( <sup>2</sup> )	.....	.....	268	0.2

<sup>1</sup>Includes pumpmen employed at petroleum and natural gas wells.  
<sup>2</sup>Less than one-tenth of 1 per cent.

Of the total number of wage-earners considered in the preceding tables, 11,857 are boys under 16 years of age, and nearly all of them received less than \$1.25 per day. It will be noticed that the totals for all classes of wage-earners receiving the three lowest groups of rates are composed very largely of boys. For all occupations combined the range of wages for 58.1 per cent of the total number was from \$1.50 to \$2.49 per day. For 16.3 per cent the rates were less than \$1.50, and the balance, 25.6 per cent, received \$2.50 or over. Of the miners, quarrymen, and stonecutters, 66.6 per cent received between \$1.50 and \$2.74 per day, leaving 11.4 per cent who received less than \$1.50 and 22 per cent who received \$2.75 or more. The group of "all other

wage-earners" is the next most important class in point of numbers. The figures for this class of employees show the following distribution: Less than \$1.25, 11.5 per cent; between \$1.25 and \$2.24, 69.9 per cent; \$2.25 or over, 18.6 per cent. There is a marked excess at the higher rates of pay for engineers, 18,416, or 70.1 per cent receiving \$2.25 a day or over; a very large proportion of these were pumpmen employed at petroleum wells. The great majority of the timbermen and track layers are concentrated in the three groups between \$1.75 and \$2.49, 70.3 per cent being included between these rates. There is less concentration among the miners' helpers, the range of wages for 70.6 per cent of them being from \$1.25 to \$2.49.

#### CONTRACT WORK.

The amount paid by mining companies for tunneling, shaft-sinking, boring test holes, and other development work, if not done by the regular employees of the company, was reported as a separate item. The amount returned for this work during the year was \$20,677,938, and the number of men so employed was reported as 21,183. The statistics for this inquiry are shown for each mineral in Table 90. A number of mining companies for which considerable contract work was carried on reported their inability to give an estimate of the number of persons employed by the contractors. The total number, therefore, can not be accepted as a full statement of the people so employed. It should be stated in this connection that the number of employees reported as engaged in this class of work is not the average number for the year as for other classes of wage-earners, but is the actual number reported, whether employed for the entire year or for shorter periods. The amount paid for this work includes not only the wages of the employees, but also the cost of materials used in the work and the profits of the contractors.

#### MISCELLANEOUS EXPENSES.

The amount, \$71,771,713, reported for miscellaneous expenses in Table 90, includes all items of expense incident to the operations of the mines, quarries, and wells not included under salaries and wages, contract work, or cost of supplies and materials. Of this total the amount paid for royalties and rent of mining plants formed \$34,530,713, or 48.1 per cent.

#### SUPPLIES AND MATERIALS.

The cost of supplies and materials of all kinds used during the year, including freight on the same, as shown by Table 90, amounted to \$123,814,967. This includes lumber and timber used for repairs, mine supports, track ties, cars, and other purposes; iron and steel for blacksmithing, rails, frogs, sleepers, etc., for tracks, and miscellaneous materials, parts of machinery, and tools used for renewals and repairs; and also explosives, water for boilers and other purposes, fuel, illuminating and lubricating oils, machinery, supplies, etc.

#### PRODUCT.

The \$796,826,417 reported as the value of products is the value f. o. b. at the mine or quarry, and represents a great variety of metallic and nonmetallic substances.

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The total represents the amount received by the mine operators for their products which, in the majority of cases, was the crude mineral, but in some cases the ore was milled, refined, calcined, or subjected to other manufacturing processes before being placed on the market by the mine operator. In a large number of cases the products of the quarries were partially manufactured into grindstones, buhrstones, millstones, paving blocks, monuments and tombstones, or shaped for building purposes.

#### POWER.

Detailed statistics for mechanical power are shown in Table 90. The primary power, consisted of 64,179 steam engines with 2,432,963 horsepower, 13,506 gas or gasoline engines with 259,695 horsepower, 980 water wheels with 60,897 horsepower, and 84,546 horsepower of which the character of generation was not reported. There were also 2,893 electric motors with 130,494 horsepower used in the operation of mines and quarries. The primary motive power generated by the mining companies amounted to 2,838,101 horsepower. In addition to this the companies rented power amounting to 29,461 horsepower, making a total of 2,867,562 used in mining operations.

#### DEVELOPMENT WORK.

In addition to the 151,516 mines, quarries, and wells for which a production was reported during the year 1902, there were 4,126 mines, quarries, and wells in which the work consisted entirely of developing the properties, no product being obtained. There is more or less development work incident to the operation of all mines, and the labor and expense should be considered as a part of the mining operations of the country, but in order to preserve a distinction between the productive and nonproductive properties the statistics for development work have been presented separately in Tables 11 and 12. These tables include all mines for which employees were reported but no production, and it is probable that in some instances the plants were idle, the employees being engaged in preserving the property from deterioration.

Table 11 shows the distribution of the statistics for development work or mines reporting no production for all minerals in each state. The greatest amount of such work was reported for Colorado. Table 12 shows the distribution of development work by minerals, the greatest amount being shown for gold and silver.



There were 3,650 operators engaged entirely in development work, who employed on the average 13,638 wage-earners and paid \$12,801,935 in wages.

The statistics for all producing mines, quarries, and wells are presented in detail in Tables 90 and 91. Table 90 is a detailed summary of the totals for each mineral in the United States. In this table the minerals are arranged in six groups, according to their character or metallic contents, or the uses to which they are put; and as miscellaneous. Table 91 is a summary of the statistics for each mineral in each state and territory. It shows separate totals for each mineral for which three or more mines were reported.

A brief description of the minerals and their uses, together with a summary of the statistics for each, is given in the following synopsis:

ABRASIVE MATERIALS.

This classification includes abrasives occurring as rock formation, and quarried out of this formation and manufactured directly into the desired shape for use, and such abrasive constituents of rock as are mechanically separated from their associated minerals. For some of the branches of this group statistics were shown at various censuses, beginning with the census of 1850, but no grouping showing most of them can be

TABLE 13.—COMPARATIVE SUMMARY: 1889 AND 1902.

	Year.	All abra- sives.	Buhrstones and mill- stones.	Corundum and emery.	Crystalline quartz.	Garnet.	Grind- stones and pulp- stones.	Infusorial earth, tripoli, and pumice.	Oilstones, whetstones, and scythe- stones.
Number of mines or quarries.....	1902 1889	82	29	5	6	7	9	11	15
Number of operators.....	1902 1889	75	29	5	5	7	9	10	10
Salaried officials, clerks, etc.:									
Number.....	1902 1889	75 (1)	7 (1)	9 (2)	8 (1)	12 (1)	25 (3)	8 (1)	6 (1)
Salaries.....	1902 1889	\$48,008 (1)	\$4,682 (1)	\$5,960 (2)	\$6,030 (1)	\$9,178 (1)	\$13,042 (2)	\$4,016 (1)	\$6,100 (1)
Wage-earners:									
Average number.....	1902 1889	610 370	86 498	47 4129	29 (1)	118 (1)	210 (3)	35 452	85 491
Wages.....	1902 1889	\$296,914 \$92,512	\$39,562 \$17,853	\$32,871 \$44,660	\$13,592 (1)	\$59,632 (1)	\$99,598 (3)	\$13,682 \$3,388	\$37,977 \$21,911
Miscellaneous expenses.....	1902 1889	\$42,410 \$10,597	\$1,480 \$923	\$2,779 \$2,462	\$1,950 (1)	\$4,952 (1)	\$24,433 (3)	\$2,263 \$6,955	\$4,553 \$256
Cost of supplies and materials.....	1902 1889	\$80,309 \$12,394	\$1,809 \$1,413	\$26,114 \$9,383	\$950 (1)	\$10,128 (1)	\$31,349 (3)	\$2,297 \$760	\$7,662 \$838
Product:									
Quantity, short tons.....	1902 1889	.....	6,667 (1)	4,251 2,245	15,104 (1)	3,926 (1)	55,657 (3)	6,415 3,466	3,876 2,991
Value.....	1902 1889	\$1,177,711 \$686,659	\$59,808 \$35,153	\$104,605 \$105,565	\$43,085 (1)	\$132,820 (1)	\$667,431 \$499,567	\$55,994 \$23,372	\$118,968 \$82,980

<sup>1</sup> Not reported.  
<sup>2</sup> Included in wage-earners and wages.  
<sup>3</sup> Included with statistics for sandstones.

<sup>4</sup> Includes foremen; their salaries are included in wages.  
<sup>5</sup> Number of pieces.

made from statistics prior to the census of 1880. In some respects even the statistics of 1880 are not strictly comparable with those of later censuses, owing to the different methods of collection and presentation. The

grouping made for the census of 1880 includes 45 mines, with a value of products of \$647,002. Table 13 is a comparative summary of the statistics for 1889 and 1902. The statistics for 1902 are summarized in Table 14.

TABLE 14.—SUMMARY BY CLASSES: 1902.

	All abra- sives.	Buhrstones and mill- stones.	Corundum and emery.	Crystalline quartz.	Garnet.	Grind- stones and pulp- stones.	Infusorial earth, tripoli, and pumice.	Oilstones, whetstones, and scythe- stones.
Number of mines or quarries.....	82	29	5	6	7	9	11	15
Number of operators.....	75	29	5	5	7	9	10	10
Salaried officials, clerks, etc.:								
Number.....	75	7	9	8	12	25	8	6
Salaries.....	\$48,008	\$4,682	\$5,960	\$6,030	\$9,178	\$13,042	\$4,016	\$6,100
Wage-earners:								
Average number.....	610	86	47	29	118	210	35	85
Wages.....	\$296,914	\$39,562	\$32,871	\$13,592	\$59,632	\$99,598	\$13,682	\$37,977
Miscellaneous expenses.....	\$42,410	\$1,480	\$2,779	\$1,950	\$4,952	\$24,433	\$2,263	\$4,553
Cost of supplies and materials.....	\$80,309	\$1,809	\$26,114	\$950	\$10,128	\$31,349	\$2,297	\$7,662
Value of product.....	\$1,177,711	\$59,808	\$104,605	\$43,085	\$132,820	\$667,431	\$55,994	\$118,968

<sup>1</sup> The United States Geological Survey reports \$84,335, which is the value of the finished product; census values represent the product mined.  
<sup>2</sup> The United States Geological Survey reports \$221,762, which includes \$107,794 for a product finished elsewhere than at the quarry.

Buhrstones and millstones to the value of \$1,425, included in the statistics for 1902, were quarried with siliceous crystalline rocks; grindstones and pulpstones to the value of \$403,066, and oilstones, whetstones, and scythestones to the value of \$38,612 with sandstones and quartzites; and infusorial earth, tripoli, and pumice

to the value of \$1,436 with talc and soapstone, all as by-products. In these cases the wages and other expenses of production are included in the statistics for siliceous crystalline rocks, sandstones and quartzites, and talc and soapstone, respectively.

The crystalline quartz included in this report



which is used in the manufacture of sandpaper, scouring soaps, wood-finishing materials, etc., and does not include the product used in the pottery and glass industries. On the other hand, the entire production of infusorial earth, tripoli, and pumice is included on account of the small production of these materials, although the quantity actually used for abrasive purposes is inconsiderable.

In most instances the preparation for the market is largely done at the quarries, and as it is impracticable

to segregate the statistics, the value given is that of the finished product.

In addition to the active mines there were 34 properties distributed throughout the United States that were idle in 1902, and 1 mine at which development work was reported, but no production.

The value of the yearly production of abrasive materials, as reported by the United States Geological Survey, is shown in the following table:

TABLE 15.—VALUE OF ABRASIVE MATERIALS PRODUCED: 1889 TO 1902.

YEAR.	All abrasives.	Buhrstones and millstones.	Corundum and emery.	Crystalline quartz. <sup>1</sup>	Garnet. <sup>1</sup>	Grindstones and pulpstones.	Infusorial earth, tripoli, and pumice.	Oilstones, whetstones, and scythestones.
1889.....	\$636,661	\$35,155	\$105,567	.....	.....	\$439,587	\$23,372	*\$32,980
1890.....	643,264	28,720	89,396	.....	.....	450,000	50,240	69,909
1891.....	754,918	16,587	90,230	.....	.....	476,118	21,968	150,000
1892.....	667,346	28,417	181,300	.....	.....	272,244	43,656	146,730
1893.....	656,506	16,639	142,325	.....	.....	338,787	22,582	135,173
1894.....	590,342	18,887	95,998	\$18,054	\$90,660	223,214	11,718	136,873
1895.....	633,011	22,542	106,256	27,000	95,050	205,768	20,514	155,881
1896.....	703,406	22,567	118,246	18,000	68,877	326,826	26,792	127,098
1897.....	776,272	25,932	106,574	22,500	80,863	388,058	22,385	149,970
1898.....	1,098,784	25,934	275,064	23,990	86,850	499,789	16,691	180,486
1899.....	1,225,211	28,115	150,600	39,000	98,325	675,586	25,302	208,288
1900.....	1,208,073	32,858	102,715	40,705	123,475	710,026	24,207	174,087
1901.....	1,194,772	57,179	146,040	41,500	158,100	590,708	52,950	158,300
1902.....	*1,324,005	59,808	104,605	84,335	132,820	667,431	53,244	*221,702

<sup>1</sup> Statistics prior to 1894 not available.

\* Value of unfinished product.

† Includes \$107,794 for finished oilstones, whetstones, and scythestones not shown in census tables.

#### ASBESTOS.

Two distinct minerals are included in these statistics as asbestos, one being a variety of amphibole and the other the fibrous variety of serpentine, known as chrysotile. The production of the United States is confined almost entirely to the amphibole variety. The first census statistics for this mineral were reported in 1880, when 4 mines were returned for Maryland, and 1 each for Georgia, New York, and South Carolina, with a total production of 150 tons valued at \$4,312. At the Eleventh Census the number of mines was not reported, but the production was given as 30 tons valued at \$1,800. The statistics for 1902 are summarized in the following table:

TABLE 16.—Summary: 1902.

Number of mines.....	4
Number of operators.....	4
Salaried officials, clerks, etc.:	
Number.....	7
Salaries.....	\$2,623
Wage-earners:	
Average number.....	23
Wages.....	\$8,250
Miscellaneous expenses.....	\$1,758
Cost of supplies and materials.....	\$3,283
Product: <sup>1</sup>	
Quantity, short tons.....	2,505
Value.....	\$46,200

<sup>1</sup> The United States Geological Survey reports 1,005 short tons, valued at \$16,200, which is the product marketed. Census figures represent the product mined.

Of the total production, there were 1,500 short tons of crude rock which had not been prepared for the market. The value of the product reported, therefore,

does not represent the value of the finished material only. In some instances the asbestos is crushed, separated, and otherwise prepared for the market at the mines, and the mining and manufacturing processes are so intermingled that it is impossible to present separate statistics for each branch of the industry.

In addition to the active mines there were 15 properties that had been developed or prospected for asbestos in former years, but were idle in 1902. These were located in Georgia, North Carolina, Vermont, California, Pennsylvania, Virginia, Wisconsin, and Wyoming.

The quantity and value of the yearly production of asbestos in the United States, and the production in Canada, which is almost entirely of the chrysotile variety, as reported by the United States Geological Survey, are shown in Tables 17 and 18.

TABLE 17.—Production of asbestos in the United States: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	30	\$1,800
1890.....	71	4,560
1891.....	66	3,960
1892.....	104	6,416
1893.....	50	2,500
1894.....	325	4,463
1895.....	795	13,525
1896.....	504	6,100
1897.....	580	6,450
1898.....	605	10,300
1899.....	681	11,740
1900.....	1,054	16,310
1901.....	747	13,498
1902.....	1,005	16,200

TABLE 18.—Production of asbestos in Canada: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	6, 118	\$426, 554
1890.....	9, 860	1, 260, 240
1891.....	9, 279	999, 978
1892.....	6, 042	388, 462
1893.....	6, 478	313, 806
1894.....	7, 680	420, 825
1895.....	8, 756	368, 175
1896.....	12, 250	429, 856
1897.....	130, 442	445, 368
1898.....	123, 785	486, 227
1899.....	125, 586	485, 849
1900.....	130, 641	763, 481
1901.....	138, 079	1, 186, 434
1902.....	140, 416	1, 148, 319

<sup>1</sup> Including asbestic.<sup>2</sup> Including 10,197 tons of asbestic.

## ASPHALTUM AND BITUMINOUS ROCK.

The hydrocarbon rocks having an asphaltic base—as bituminous limestone and sandstone—and some of the purer forms of bitumen, as elaterite and uintaite, are the substances considered in the statistics for asphaltum. The asphaltum by-product of petroleum refining is excluded, having been included in manufactures at the Twelfth Census.

The first census statistics shown were for 1860, 1 establishment in California returning, as "asphaltum work," products valued at \$10,000. In 1870, 1 establishment in West Virginia reported 30,000 short tons valued at \$450,000; in 1880, 2 mines in California reported 444 tons valued at \$4,440. In 1889 the number of mines was not given, but the product was stated to be 51,735 short tons valued at \$171,537, and the states

producing, California, Kentucky, and Utah. The statistics for 1902 are summarized in the following table:

TABLE 19.—Summary: 1902.

Number of mines or quarries.....	24
Number of operators.....	24
Salaries officials, clerks, etc.:	
Number.....	52
Salaries.....	\$48, 233
Wage-earners:	
Average number.....	156
Wages.....	\$79, 570
Contract work.....	\$10, 060
Miscellaneous expenses.....	\$19, 753
Cost of supplies and materials.....	\$21, 928
Product: <sup>1</sup>	
Quantity, short tons.....	66, 238
Value.....	\$236, 728

<sup>1</sup>The United States Geological Survey reports 105,456 short tons, valued at \$765,048, which includes the residual asphaltum product of petroleum refineries. This residuum being the product of manufacturing processes, is not reported by the census.

In some instances the rock is crushed at the mine or quarry, and as it is impossible to separate the statistics of manufacture from those of mining, they are presented together.

Thirteen mines, situated in California, Indian Territory, Kentucky, Missouri, Tennessee, Texas, and Utah, were idle during 1902, and 6 mines reported development work, but no production.

The yearly production of asphaltum and bituminous rock, as reported by the United States Geological Survey, affords no statistics comparable with those of the census, for the reason that it includes the asphaltum by-product of petroleum refining.

The production of asphaltum in the principal producing countries of the world, as reported by the United States Geological Survey, is shown in Table 20.

TABLE 20.—PRODUCTION OF ASPHALTUM IN PRINCIPAL PRODUCING COUNTRIES: 1890 TO 1901.

[Quantity in short tons.]

YEAR.	UNITED STATES.		TRINIDAD.		GERMANY.		FRANCE.		ITALY.		SPAIN.		AUSTRIA-HUNGARY.		RUSSIA.		VENE-ZUELA.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.
1890.....	40, 841	\$190, 416	94, 834	\$254, 019	59, 861	\$89, 961	198, 934	\$335, 092	49, 728	\$232, 351	47	\$94					
1891.....	45, 054	242, 264	110, 929	297, 132	54, 163	89, 419	278, 316	402, 681	31, 064	131, 028	274	505	43	\$258	15, 471	\$108, 000	
1892.....	57, 680	445, 375	129, 438	347, 310	58, 713	99, 686	246, 848	323, 834	38, 107	162, 308	554	1, 014	48	288	20, 838	118, 760	
1893.....	47, 779	372, 232	106, 515	285, 309	52, 056	84, 962	244, 644	311, 116	28, 630	109, 200	904	1, 235	97	624	18, 337	120, 000	
1894.....	60, 570	353, 400	121, 186	324, 606	61, 691	107, 350	254, 562	339, 294	66, 663	270, 854	1, 065	1, 939	2, 740	75, 696	17, 706	176, 400	1, 771
1895.....	68, 163	345, 281	102, 368	274, 200	65, 688	108, 153	294, 234	355, 700	51, 478	197, 584	870	1, 525	2, 968	59, 001	20, 699	144, 893	8, 073
1896.....	80, 503	577, 563	110, 667	296, 457	67, 830	107, 908	249, 052	336, 013	60, 092	171, 507	1, 231	2, 156	3, 449	72, 429	20, 043	133, 141	6, 197
1897.....	75, 945	664, 632	146, 172	292, 344	67, 938	91, 984	257, 127	328, 002	60, 964	183, 017	1, 825	3, 196	3, 699	81, 104	24, 488	171, 416	11, 528
1898.....	76, 337	675, 649	112, 220	553, 890	75, 550	99, 088	252, 358	322, 117	103, 312	256, 347	2, 604	4, 605	4, 152	86, 018	13, 244	123, 176	N11.
1899.....	75, 085	553, 904	153, 870	745, 242	82, 397	123, 984	285, 208	356, 719	90, 350	222, 519	2, 801	4, 964	6, 276	79, 634	25, 435	170, 300	12, 014
1900.....	54, 389	415, 968	177, 751	855, 744	98, 833	160, 000	293, 654	383, 429	112, 115	292, 287	4, 621	8, 632	3, 787	70, 603	( <sup>1</sup> )	( <sup>1</sup> )	17, 941
1901.....	63, 134	555, 335	191, 488	799, 010	99, 420	168, 750	275, 216	372, 989	114, 761	261, 761	4, 361	8, 137	3, 770	68, 150	( <sup>1</sup> )	( <sup>1</sup> )	24, 378

<sup>1</sup> Statistics not yet available.

## BARYTES.

The mineral barite, known commercially as barytes, and often called heavy spar, from its high specific gravity, is used principally in the manufacture of paints.

The census of 1860 was the first at which this industry was reported, 1 establishment in New York report-

ing a product valued at \$25,000. At the census of 1870, 1 establishment in Connecticut reported a product valued at \$100,000. In 1880, 6 mines reported a production of 3,608 tons valued at \$37,491. The number of mines was not given in 1889, but the quantity of products reported from Illinois, Missouri, North Carolina, and Virginia was 21,460 short tons, valued at \$106,313.

Most of the production was in Missouri and Virginia, with a smaller amount from Illinois. The statistics for 1902 are summarized in the following table:

TABLE 21.—Summary: 1902.

Number of mines .....	49
Number of operators .....	42
Salaried officials, clerks, etc.:	
Number .....	28
Salaries .....	\$15,159
Wage-earners:	
Average number .....	336
Wages .....	\$130,285
Contract work .....	\$1,000
Miscellaneous expenses .....	\$35,555
Cost of supplies and materials .....	\$7,772
Product: <sup>1</sup>	
Quantity, short tons .....	61,668
Value .....	\$203,154

<sup>1</sup> Includes 539 tons, valued at \$1,618, the by-product of 2 lead mines; the wages and other details are embraced in statistics for lead.

The value of the product is that of crude barytes which was washed at the mines, but ground and bleached elsewhere. A large proportion was mined in an irregular manner by farmers and others who worked at such odd times as their other employment permitted.

Six mines or quarries were idle during the year, 1 each in Missouri and Ohio, and 2 each in Tennessee and Virginia.

The quantity and value of the yearly production of barytes in the United States, as reported by the United States Geological Survey, are shown in the following table:

TABLE 22.—Production of barytes: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	21,460	\$106,313
1890.....	21,911	86,506
1891.....	31,069	118,363
1892.....	32,108	130,025
1893.....	28,970	88,506
1894.....	23,335	86,983
1895.....	21,529	68,321
1896.....	17,068	46,513
1897.....	26,042	58,295
1898.....	31,306	108,339
1899.....	41,894	139,528
1900.....	67,680	188,089
1901.....	49,070	157,844
1902.....	61,668	203,154

## BAUXITE.

Most of the bauxite mined in this country is used as a source of the metal aluminum. The quantity used in the manufacture of chemical salts is comparatively small. The production of the mineral in the United States on a commercial scale began with the opening of the deposits in Georgia during 1889, but it does not appear to have been included in the reports of the Eleventh Census. The statistics for the industry for 1902 are summarized in the following table:

TABLE 23.—Summary: 1902.

Number of mines .....	88
Number of operators .....	7
Salaried officials, clerks, etc.:	
Number .....	42
Salaries .....	\$33,230
Wage-earners:	
Average number .....	150
Wages .....	\$59,763
Contract work .....	\$500
Miscellaneous expenses .....	\$14,939
Cost of supplies and materials .....	\$40,019
Product:	
Quantity, long tons .....	29,222
Value .....	\$123,206

One mine in Arkansas was reported idle during 1902. Some of the bauxite is sorted at the mine and dried in the air or in kilns or furnaces prior to its shipment to market.

The yearly production of bauxite in the United States and in the world as reported by the United States Geological Survey is shown in Tables 24 and 25.

TABLE 24.—Production of bauxite in the United States: 1889 to 1902.

YEAR.	Quantity (long tons).	Value.
1889.....	728	\$2,366
1890.....	1,844	6,012
1891.....	3,598	11,675
1892.....	10,513	34,138
1893.....	9,179	29,377
1894.....	11,065	35,813
1895.....	17,089	44,000
1896.....	18,364	47,338
1897.....	20,590	57,652
1898.....	25,149	75,437
1899.....	35,280	125,596
1900.....	28,184	89,676
1901.....	18,905	79,914
1902.....	29,222	123,206

TABLE 25.—World's production of bauxite: 1900 and 1901.

COUNTRY.	1900		1901	
	Quantity (metric tons).	Value.	Quantity (metric tons).	Value.
Total .....	87,959	\$189,022	106,184	\$218,597
United States.....	28,566	89,676	19,207	79,914
France .....	58,530	92,596	76,620	124,168
United Kingdom.....	6,878	6,750	10,357	14,515

## BORAX.

This, the most important salt of boric acid, used for a flux in soldering metals, for making enamels, for fixing colors on porcelain, as a preservative of food, and as a soap, is, in this country, derived mainly from the colemanite deposits of California, although a little is produced from the marsh deposits of California, Nevada, and Oregon.

The first commercial production of borax in the United States was in 1864, when 12 short tons were mined in California. Since that year the production has fluctuated from nothing in 1869, 1870, and 1871, to 19,142 short tons in 1902. Until the present investigation, borax has never been separately treated in census returns. The statistics for 1902 are summarized in Table 26.

TABLE 26.—Summary: 1902.

Number of mines.....	6
Number of operators .....	6
Salaried officials, clerks, etc.:	
Number .....	14
Salaries .....	\$18,128
Wage-earners:	
Average number .....	153
Wages .....	\$114,865
Miscellaneous expenses .....	\$47,606
Cost of supplies and materials .....	\$213,538
Product: <sup>1</sup>	
Quantity, short tons.....	19,142
Value.....	\$2,333,614

<sup>1</sup> The United States Geological Survey reports 20,004 short tons valued at \$2,633,614, which includes 862 short tons of boric acid, valued at \$155,000. This acid representing a manufacture, is not reported by the census.

The product reported is the refined, it being impossible to separate the statistics of the mining and manufacturing processes.

At 1 mine in California development work was carried on during 1902, but no production was reported. Six mines were idle—3 in California, 2 in Nevada, and 1 in Oregon.

The quantity and value of the yearly production of borax in California, as reported by the United States Geological Survey, are shown in Table 27.

TABLE 27.—Production of borax in California: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	965	\$145,473
1890.....	3,201	480,152
1891.....	4,287	640,000
1892.....	5,525	838,787
1893.....	3,955	593,292
1894.....	5,770	807,807
1895.....	5,959	595,900
1896.....	6,754	675,400
1897.....	8,000	1,080,000
1898.....	8,300	1,153,000
1899.....	20,357	1,139,882
1900.....	25,837	1,013,251
1901.....	23,231	1,012,118
1902 <sup>1</sup> .....	20,004	2,538,614

<sup>1</sup>Includes small quantities and values of same, mined in Oregon and Nevada. To separate would reveal the operations of individual operators.

#### CEMENT.

The statistics include the manufacture of Portland and natural-rock cement by establishments mining or quarrying the whole or a part of their raw material. Establishments engaged in the manufacture of cement from purchased raw material entirely are not included, nor is the manufacture of Pozzuolana or slag cement from furnace slag. Portland cement is a compound consisting essentially of lime, silica, and alumina, produced by intimately mixing some form of calcium carbonate with clay. This mixture is calcined and the resulting clinkers are ground to a fine powder. Natural-rock cement is produced by calcining a natural product, such as an argillaceous limestone, possessing the proper proportions of lime and clay for hydraulic cement, and usually considerable magnesia. The marl mined or excavated and manufactured into Portland cement by the miner or excavator is included in these statistics, and not in the report on marl.

The census of 1850 was the first to present statistics for this industry, and totals for each census from 1850 to 1902 are summarized in the following table:

TABLE 28.—Comparative summary: 1850 to 1902.

YEAR.	Number of mines or quarries.	WAGE-EARNERS.		Cost of supplies and materials.	PRODUCT.	
		Average number.	Wages.		Quantity (barrels).	Value.
1850.....	135	407	\$117,924	\$238,157	( <sup>2</sup> )	\$509,110
1860.....	114	740	206,460	262,920	( <sup>2</sup> )	767,080
1870.....	145	1,632	631,993	773,192	( <sup>2</sup> )	2,033,893
1880.....	28	2,102	750,367	500,463	2,072,943	1,852,707
1889.....	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	7,000,000	5,000,000
1902.....	101	13,011	6,323,852	9,098,226	24,656,360	24,268,338

<sup>1</sup> Establishments.

<sup>2</sup> Not reported.

At the Eleventh Census the statistics for cement were included in those for manufactures under the classification of "lime and cement," and can not be separated. The figures for that census in the table are estimates taken from the table introductory to the Report on Mineral Industries, 1890. In 1880 "hydraulic cement" appeared in mining industries, but at all the prior censuses "cement" was shown in manufactures.

The statistics for the industry in 1902 are summarized in Table 29.

TABLE 29.—Summary: 1902.

Number of mines or quarries.....	101
Number of operators.....	93
Salaries of officials, clerks, etc.:	
Number.....	913
Salaries.....	\$1,087,514
Wage-earners:	
Average number.....	13,041
Wages.....	\$6,323,852
Contract work.....	\$10,627
Miscellaneous expenses.....	\$1,665,520
Cost of supplies and materials.....	\$9,098,226
Product: <sup>1</sup>	
Quantity, barrels.....	24,656,360
Value.....	\$24,268,338
Portland cement—	
Quantity, barrels.....	16,691,056
Value.....	\$20,231,708
Natural-rock cement—	
Quantity, barrels.....	7,964,305
Value.....	\$4,036,630

<sup>1</sup>The United States Geological Survey reports 25,753,504 barrels, valued at \$26,366,390, which includes all manufactured cement. The census reports only the product at quarries.

As it is impossible to separate the statistics of the mining or quarrying of the raw material from the statistics of its manufacture into cement by the same operators, they are presented together.

Twenty new plants were in process of erection in 1902, at 2 of which, 1 in Michigan and 1 in New Jersey, development work was reported. Thirty plants, hitherto productive, were reported idle, and in addition, at 1 plant in New York, which has produced in past years, development work was reported in 1902, but no production. The idle plants were situated in Colorado,

Florida, Illinois, Indiana, Kentucky, Massachusetts, Michigan, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Texas, Virginia, and West Virginia.

The yearly production and imports of cement, as reported by the United States Geological Survey, are shown in the following table:

TABLE 30.—PRODUCTION AND IMPORTS OF CEMENT: 1890 TO 1902.

YEAR	PRODUCTION.								Imports (barrels).
	Total.		Portland cement.		Natural-rock cement.		Pozzuolana or slag cement.		
	Quantity (barrels).	Value.	Quantity (barrels).	Value.	Quantity (barrels).	Value.	Quantity (barrels).	Value.	
1890.....	7,776,616	\$6,880,625	335,500	\$704,050	7,441,116	\$5,676,575			1,940,186
1891.....	8,222,792	6,671,437	454,813	967,429	7,767,979	5,704,008			2,988,313
1892.....	8,758,621	7,152,750	547,440	1,153,600	8,211,181	5,999,150			2,440,654
1893.....	8,002,467	6,262,846	590,652	1,158,138	7,411,815	5,104,708			2,674,149
1894.....	8,362,245	5,030,081	798,757	1,383,473	7,563,488	3,646,608			2,638,107
1895.....	8,781,401	5,482,254	990,324	1,586,830	7,741,077	3,895,424			2,997,396
1896.....	9,513,473	6,473,213	1,543,023	2,424,011	7,970,450	4,049,202			2,989,597
1897.....	10,989,468	8,178,283	2,677,775	4,315,891	8,311,688	3,862,392			2,090,924
1898.....	12,111,208	9,859,601	3,692,284	5,970,773	8,418,924	3,898,728	(*)	(*)	2,013,518
1899.....	15,520,445	12,889,142	5,652,266	8,074,371	9,868,179	4,814,771			2,108,388
1900.....	17,231,750	13,283,681	8,482,020	9,280,525	8,383,519	3,728,848	865,611	\$274,208	2,386,683
1901.....	20,068,737	15,786,789	12,711,225	12,532,360	7,084,823	3,056,278	272,689	198,151	939,330
1902.....	*25,753,504	25,366,380	17,230,644	20,861,078	8,044,305	4,076,630	478,556	425,672	1,961,413

\* Not including 233,000 barrels of Pozzuolana or slag cement, the value of which was not reported.

(\*) Not reported.

\* Includes 1,098,144 barrels of cement, valued at \$1,098,042, manufactured by establishments not mining or quarrying the raw material and therefore not included in census reports.

CLAY.

The totals for clay mining represent only the production of crude material sold as such, and do not include the clay mining operations of manufacturers of brick, tile, pottery, and other clay products.

Clay mining appeared first in census statistics at the census of 1860. Five establishments were shown, all in Middlesex county, N. J., with products valued at \$105,660. At the census of 1870, 1 fire clay establishment was reported from Jackson county, Mich., with a value of products amounting to \$80,000. At the census of 1880, statistics were presented of 9 kaolin mines, having 23,277 tons of products valued at \$200,457. Four were situated in Newcastle county, Del., and 1 each in Indiana, Maryland, and New York, and 2 in South Carolina. No detailed statistics for clay were given at the Eleventh Census. The statistics for 1902 are summarized in the following table:

TABLE 31.—Summary: 1902.

Number of mines.....	205
Number of operators.....	203
Salaried officials, clerks, etc.:	
Number.....	185
Salaries.....	\$150,506
Wage-earners:	
Average number.....	2,433
Wages.....	\$958,892
Contract work.....	\$13,241
Miscellaneous expenses.....	\$126,873
Cost of supplies and materials.....	\$272,823
Product:	
Total quantity, short tons.....	1,455,357
Total value.....	\$2,061,072

Sixty-one idle mines were reported, distributed in 21 states; and there were 2 mines which reported development work only.

A considerable portion of the products were prepared for the market at the mines.

The kinds, quantities, and values of the yearly pro-

duction, as reported by the United States Geological Survey, are shown in the following table:

TABLE 32.—Production of clay by kinds, quantities, and values: 1897 to 1902.

[Short tons.]

KINDS.	1897	1898	1899	1900	1901	1902
Total quantity.....	563,115	585,450	843,279	1,221,660	1,367,170	1,455,357
Total value.....	\$978,448	\$1,384,766	\$1,645,528	\$1,840,377	\$2,576,982	\$2,061,072
<b>Kaolin:</b>						
Raw—						
Quantity.....	68,743	100,584	97,107	22,554	37,456	58,343
Value.....	\$367,080	\$496,979	\$471,282	\$108,220	\$141,899	\$189,603
Prepared—						
Quantity.....				87,560	59,797	65,470
Value.....				\$289,066	\$442,624	\$457,174
<b>Ball:</b>						
Raw—						
Quantity.....	112,926	101,111	22,762	13,976	21,008	30,000
Value.....	\$213,566	\$154,743	\$109,369	\$68,850	\$68,907	\$68,524
Prepared—						
Quantity.....				7,405		20,527
Value.....				\$38,133		\$102,562
<b>Fire:</b>						
Raw—						
Quantity.....	381,446	352,612	478,996	714,408	680,793	774,532
Value.....	\$397,802	\$672,362	\$826,919	\$685,927	\$746,956	\$736,055
Prepared—						
Quantity.....				131,156	248,956	152,364
Value.....				\$262,066	\$767,532	\$155,130
<b>Stoneware:</b>						
Raw—						
Quantity.....				88,815	87,829	87,147
Value.....				\$63,843	\$101,753	\$105,182
Prepared—						
Quantity.....				4,714	4,400	4,432
Value.....				\$10,862	\$12,860	\$3,660
<b>Pipe:</b>						
Raw—						
Quantity.....			89,953	42,407		94,874
Value.....			\$57,702	\$35,604		\$74,856
Prepared—						
Quantity.....				125		
Value.....				\$530		
<b>Terra cotta:</b>						
Raw—						
Quantity.....			91,661	45,077		50,453
Value.....			\$101,744	\$50,769		\$54,213
<b>Miscellaneous:</b>						
Raw—						
Quantity.....		31,193	62,800	101,411	192,077	108,020
Value.....		\$60,682	\$78,312	\$188,947	\$214,169	\$90,741
Prepared—						
Quantity.....				12,057	34,854	9,196
Value.....				\$32,560	\$80,212	\$18,372

## COAL.

The statistics under this head are for the operation of both bituminous and anthracite coal mines. The entire coal production of the country has been classified under these two general divisions, anthracite including only

the product of the mines in eastern Pennsylvania, and bituminous including all soft coals variously known as bituminous, semibituminous, semianthracite, lignite, and in several instances coal locally termed anthracite. The statistics for 1902 and 1889 are compared in summarized form in the following table:

TABLE 33.—COMPARATIVE SUMMARY: 1889 AND 1902.

	TOTAL.		BITUMINOUS.		ANTHRACITE.	
	1902	1889	1902	1889	1902	1889
Number of mines.....	5,946	112,562	5,652	12,138	334	414
Number of operators.....	4,528	( <sup>2</sup> )	4,409	( <sup>2</sup> )	119	( <sup>2</sup> )
Salaried officials, clerks, etc.:						
Number.....	22,885	2,936	19,871	2,408	3,014	528
Salaries.....	\$17,419,217	\$2,193,870	\$14,511,924	\$1,781,826	\$2,907,293	\$412,044
Wage-earners:						
Average number.....	350,329	<sup>3</sup> 296,623	280,638	<sup>3</sup> 172,841	69,091	<sup>3</sup> 128,782
Wages.....	\$220,198,401	\$106,937,058	\$181,482,288	\$67,983,885	\$38,716,113	\$38,963,173
Contract work.....	\$1,650,535	\$3,155,171	\$1,244,114	\$822,051	\$406,421	\$2,338,120
Miscellaneous expenses.....	\$26,081,698	\$15,421,591	\$16,774,459	\$6,742,221	\$9,307,239	\$8,679,370
Cost of supplies and materials.....	\$37,539,702	\$18,828,590	\$24,798,922	\$7,994,210	\$12,740,780	\$10,834,390
Product:						
Quantity, short tons.....	301,590,439	141,229,513	260,216,844	95,629,026	41,373,595	45,600,487
Value.....	\$367,032,069	\$160,226,323	\$290,858,483	\$94,346,809	\$76,173,586	\$65,879,514

<sup>1</sup> Includes 9,969 "local" mines, of which 9,920 were bituminous and 49 anthracite, for which there are no statistics for labor and expenditures.

<sup>2</sup> Not reported.

<sup>3</sup> Includes foremen; their salaries are included in wages.

The statistics of bituminous coal shown above disclose a large increase in the operations of 1902 over those of 1889 in all items except the number of mines, and this item shows a decrease amounting to 6,486 mines. This is explained by the fact that there were 9,920 "local mines" or "farmers' banks" reported at the earlier period, and only 826 in 1902. The total product of these small mines in 1889 was only 2,889,286 tons, or an average production per mine of less than 300 tons.

It would appear from the statistics of anthracite coal that the industry had fallen off in its operations between 1889 and 1902, but it should be borne in mind that during the latter year the great strike stopped production from May 12 to October 23. That the operations would have shown under normal conditions an increase of 50 per cent over the figures reported above, is a safe assumption.

Bituminous coal mines reported idle during 1902 number 380, distributed among many states and territories, in addition to which there were 29 bituminous and 2 anthracite mines at which development work only was reported.

The quantity and value of coal annually produced in the United States and in the world, as reported by the United States Geological Survey, are shown in Tables 34 and 35.

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TABLE 34.—Production of bituminous and anthracite coal in the United States, quantity and value: 1889 to 1902.

YEAR.	TOTAL.		BITUMINOUS.		ANTHRACITE.	
	Quantity (short tons).	Value.	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1889.....	141,229,513	\$160,226,323	95,684,643	\$94,504,745	45,544,970	\$65,721,578
1890.....	157,770,963	176,804,573	111,302,322	110,420,801	46,468,641	66,383,772
1891.....	168,566,668	191,133,135	117,901,237	117,188,400	50,665,431	73,944,735
1892.....	179,329,071	207,566,381	126,856,567	125,124,381	52,472,504	82,442,000
1893.....	182,352,774	208,438,696	128,395,231	122,751,618	53,967,543	85,687,078
1894.....	170,741,526	186,141,564	118,820,405	107,653,501	51,921,121	78,488,063
1895.....	193,117,530	197,799,043	135,118,193	115,779,771	57,999,337	82,019,272
1896.....	191,986,357	196,640,166	137,640,276	114,891,515	54,346,081	81,748,651
1897.....	200,229,199	198,897,178	147,617,519	119,595,224	52,611,680	79,301,954
1898.....	219,976,267	208,023,250	166,598,623	132,608,713	53,382,644	75,414,537
1899.....	253,741,192	256,094,234	193,323,187	167,952,104	60,418,005	88,142,130
1900.....	269,684,027	306,688,164	212,316,112	220,920,313	57,367,915	85,757,851
1901.....	293,299,816	348,926,069	225,828,149	236,422,049	67,471,667	112,504,020
1902.....	301,590,439	367,032,069	260,216,844	290,858,483	41,373,595	76,173,586

TABLE 35.—World's production of coal: 1889 to 1902.

YEAR.	Total (short tons).	Other countries (short tons).	United States (short tons).	Per cent of United States.
1889.....	531,797,039	390,567,426	141,229,613	26.6
1890.....	563,693,232	405,922,269	157,770,963	28.0
1891.....	587,554,383	418,987,915	168,566,668	28.7
1892.....	593,497,904	414,168,833	179,329,071	30.2
1893.....	582,438,296	409,285,522	182,352,774	31.3
1894.....	610,487,368	439,745,842	170,741,526	28.0
1895.....	644,177,076	451,059,546	193,117,530	30.0
1896.....	664,001,718	472,015,361	191,986,357	28.9
1897.....	697,213,515	496,984,316	200,229,199	28.7
1898.....	738,129,668	518,153,341	219,976,267	29.8
1899.....	801,976,021	549,234,829	253,741,192	31.6
1900.....	846,041,848	576,357,821	269,684,027	31.9
1901.....	869,037,199	576,737,383	293,299,816	33.8
1902.....	( <sup>2</sup> )	( <sup>2</sup> )	301,590,439	.....

<sup>1</sup> Latest available figures are used in making up totals for 1901.

<sup>2</sup> Figures not available.

It will be noted that Table 35 indicates that the proportion of the world's production of coal mined in the United States is increasing from year to year by a gradual but almost constant progression.

#### COPPER ORE.

This class embraces all ores whose principal or only value is their copper contents. Copper is also recovered as a by-product of the smelting of ores valued chiefly for their precious metal contents; all statistics relating to the mining of such ores are included in the returns for gold and silver mines. Ore dressing works (stamp mills and concentrating plants) connected with copper mines are included in the returns. Smelters are regarded as manufacturing establishments, and the data for the same are not included in the mine returns. At the Eleventh Census concentrating plants in Montana were reported together with smelters, and are therefore omitted from the comparative statement below.

TABLE 36.—Summary: 1889 and 1902.

	1902	1889
Number of mines.....	144	( <sup>1</sup> )
Number of operators.....	144	( <sup>2</sup> )
Salaried officials, clerks, etc.:		
Number.....	1,208	70
Salaries.....	\$1,768,456	\$123,236
Wage-earners:		
Average number.....	26,007	19,750
Wages.....	\$21,151,405	\$6,610,781
Contract work.....	\$188,768	\$357,061
Miscellaneous expenses.....	\$1,397,463	\$1,852,758
Cost of supplies and materials.....	\$11,088,175	\$5,638,694
Product: <sup>4</sup>		
Quantity, short tons.....	11,780,064	3,322,742
Value.....	\$51,178,086	( <sup>3</sup> )

<sup>1</sup> Production for the United States; all other figures for Arizona, Michigan, Montana, and New Mexico only. Includes expenses of stamp mills in Michigan.

<sup>2</sup> Not reported.

<sup>3</sup> Includes foremen; their salaries are included in wages.

<sup>4</sup> The United States Geological Survey reports the refined metal from all sources valued at New York city.

The value reported in Table 36 is the value of the product classed as copper ore, rough or dressed, at the mine. No corresponding value was reported at the Eleventh Census, the value reported for 1889 being that of the fine copper contents of all ores, including those whose chief value was that of their precious metal contents. In order to make the data comparable, the quantity and value of the fine copper contents of all ores mined in each census year are presented in the following statement:

YEAR.	Pounds.	Gross value at mine.
1902.....	639,033,392	\$71,192,014
1889.....	231,246,214	26,907,809

The fine copper contents of all ores mined in 1902, with their sources of production, are shown as follows:

CLASS OF MINE.	Pounds.	Gross value at mine.
Total.....	639,033,392	\$71,192,014
Copper.....	625,004,529	70,175,810
Gold and silver.....	14,028,863	1,016,204

The production of refined copper from domestic ores for 1902, based upon returns from copper refineries, is reported by the United States Geological Survey at 659,508,644 pounds. Thus the copper contents of the mining product of 1902 vary only by 3 per cent from the product of copper refining for the same year.

#### FLINT AND FELDSPAR.

The mineral included in this report as flint is commercially known as such, but is, in reality, a crystalline or vitreous variety of quartz, there being no production of true flint in the United States, although its occurrence has been noted. The crystalline quartz, prepared for wood finishing, or for the manufacture of scouring soaps, is not included here, but is shown under abrasive materials. Of the group of feldspars, orthoclase is the most ordinary species and the one most commonly mined in this country. Both flint and feldspar are used chiefly in the pottery and porcelain industry.

The census of 1880 was the first at which statistics were shown for flint and feldspar, when they were classified as "quartz and feldspar." Reports were given for 14 mines—5 in Maryland, 2 in Massachusetts, 2 in Michigan, 1 in New Hampshire, and 4 in New York. The product given was 21,571 tons, valued at \$103,878. At the Eleventh Census the production of flint was given as 11,113 long tons (12,447 short tons), and its value as \$49,137. The production of feldspar was stated to be 6,970 long tons (7,806 short tons), valued at \$39,370.

The statistics for flint and feldspar during 1902 are summarized in the following table:

TABLE 37.—Summary: 1902.

	Total.	Flint.	Feldspar.
Number of mines or quarries.....	46	19	27
Number of operators.....	43	17	26
Salaried officials, clerks, etc.:			
Number.....	45	18	27
Salaries.....	\$34,425	\$14,330	\$20,095
Wage-earners:			
Average number.....	371	119	252
Wages.....	\$154,898	\$47,454	\$107,444
Miscellaneous expenses.....	\$33,698	\$14,291	\$19,407
Cost of supplies and materials.....	\$68,920	\$18,642	\$50,278
Product:			
Quantity, short tons.....	81,652	36,365	45,287
Value.....	\$394,633	\$144,209	\$250,424
Crude—			
Quantity, short tons.....	42,165	20,285	21,870
Value.....	\$90,547	\$35,046	\$55,501
Ground—			
Quantity, short tons.....	39,487	16,070	23,417
Value.....	\$304,086	\$109,163	\$194,923

Of the product reported, 42,165 short tons represent the crude product and 39,487 short tons the material ground at the mines, it being impossible to separate the statistics of the mining and the manufacturing done by the same operators.

Six flint mines, situated in Connecticut, Maryland, New York, and Wisconsin, and 9 feldspar mines in Alabama, Connecticut, New York, and Pennsylvania were reported idle during 1902.

The quantity and value of the yearly production of flint and of feldspar, as reported by the United States Geological Survey, are shown in Tables 38 and 39.

TABLE 38.—Production of flint: 1892 to 1902.

YEAR.	TOTAL.		CRUDE.		GROUND.	
	Quantity (short tons).	Value.	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1892	122,400	\$80,000				
1893	138,231	68,792				
1894	142,560	819,200				
1895	113,747	21,038				
1896	112,458	24,226				
1897	118,466	26,227				
1898	121,425	42,670				
1899	129,852	180,345				
1900	32,496	86,351	18,611	\$34,553	13,884	\$51,798
1901	34,420	149,297	16,777	30,692	17,643	118,605
1902	36,365	144,209	20,295	35,046	16,070	109,163

<sup>1</sup>Crude and ground not separately reported.

TABLE 39.—Production of feldspar: 1892 to 1902.

YEAR.	TOTAL.		CRUDE.		GROUND.	
	Quantity (short tons).	Value.	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1892	116,800	\$75,000				
1893	120,578	68,307				
1894	119,264	167,000				
1895	18,523	30,000				
1896	110,203	35,200				
1897	112,516	43,100				
1898	113,440	32,395				
1899	124,202	211,545				
1900	24,821	180,971	1,787	\$7,259	23,034	\$173,712
1901	34,741	220,422	9,960	21,669	24,781	198,753
1902	45,287	250,424	21,870	55,501	23,417	194,923

<sup>1</sup>Crude and ground not separately reported.

#### FLUORSPAR.

The Eleventh Census was the first to present statistics for the mining of fluorspar, also known as fluorite—a calcium fluoride, varied in color, used chiefly for flux and the manufacture of hydrofluoric acid. Neither the number of mines nor of establishments was reported, but the product, all of which was mined in Illinois, was given as 9,500 short tons, valued at \$45,835. The statistics of the industry for 1902 are summarized in the following table:

TABLE 40.—Summary: 1902.

Number of mines or quarries	22
Number of operators	18
Salaried officials, clerks, etc.:	
Number	42
Salaries	\$27,811
Wage-earners:	
Average number	269
Wages	\$110,002
Contract work	\$300
Miscellaneous expenses	\$23,502
Cost of supplies and materials	\$31,374
Product: <sup>1</sup>	
Quantity, short tons	48,818
Value	\$275,682

<sup>1</sup>The United States Geological Survey reports 48,018 short tons, valued at \$271,832, which is the product marketed. Census figures represent the product mined.

Less than one-tenth of the total quantity and about one-fifth of the entire value reported represent the product prepared at the mine for the market, the preparation consisting of drying and grinding in addition to the usual washing.

One mine in Kentucky was reported idle during 1902, and there were 2 mines in Illinois at which development work only was done.

The quantity and value of the yearly production of fluorspar, as reported by the United States Geological Survey, are shown in Table 41.

TABLE 41.—Production of fluorspar: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889	9,500	\$45,835
1890	8,250	55,328
1891	10,044	78,380
1892	12,250	89,000
1893	12,400	84,000
1894	7,500	47,500
1895	4,000	24,000
1896	6,500	52,000
1897	5,062	37,159
1898	7,675	63,050
1899	15,900	96,650
1900	18,450	94,500
1901	19,586	113,803
1902	48,018	271,832

#### FULLER'S EARTH.

Under this head are included various colored, smooth, greasy, clay-like substances, much higher in silica than ordinary clay, the chief use of which is for clarifying cottonseed and lubricating oils. There are no census statistics of fuller's earth prior to those for 1902, the substance not having been mined in commercial quantities until after the Eleventh Census was taken. The statistics for 1902 are summarized in the following table:

TABLE 42.—Summary: 1902.

Number of mines	4
Number of operators	4
Salaried officials, clerks, etc.:	
Number	14
Salaries	\$10,000
Wage-earners:	
Average number	114
Wages	\$33,775
Contract work	\$4,021
Miscellaneous expenses	\$2,037
Cost of supplies and materials	\$28,966
Product:	
Quantity, short tons	11,492
Value	\$98,144

The bulk of the material is dried and ground at the mines, and in some cases sized, and the mining statistics, not being separable, include these operations.

Two mines were reported idle during 1902, 1 in Georgia and 1 in New York.

The quantity and value of the yearly production of fuller's earth, as reported by the United States Geological Survey, are shown in the following table:

TABLE 43.—Production of fuller's earth: 1895 to 1902.

YEAR.	Quantity (short tons).	Value.
1895	6,900	\$41,400
1896	9,872	59,360
1897	17,113	112,272
1898	14,860	106,500
1899	12,381	79,644
1900	9,698	67,535
1901	14,112	96,836
1902	11,492	98,144

#### GOLD AND SILVER.

Under this designation are embraced (1) placer mines, which produce gold usually associated with silver, and (2) deep mines, which produce gold and silver bearing



ore, some of them being equipped with reduction works where the ore is reduced to bullion. The silver mines include also argentiferous lead mines.

The statistics relative to the mining of copper ores

carrying small values in gold and silver are included with the returns for copper mining.

Table 44 is a comparative summary for gold and silver mines, as herein defined, for 1889 and 1902.

TABLE 44.—COMPARATIVE SUMMARY: 1889 AND 1902.

	1902				1889	
	Producing mines.			Develop- ment work.	All mines.	All mines.
	Total.	Placer.	Deep.			
Number of mines.....	2,992	975	2,017	3,252	6,244	4,738
Number of operators.....	2,992	975	2,017	3,252	6,244	4,738
Salaried officials, clerks, etc.:						
Number.....	3,480	275	3,205	2,284	5,764	873
Salaries.....	\$5,076,773	\$324,418	\$4,752,355	\$2,335,470	\$7,412,248	\$1,347,373
Wage-earners:						
Average number.....	86,142	2,321	33,821	11,763	47,905	156,434
Wages.....	\$36,077,492	\$1,818,758	\$34,258,734	\$11,540,684	\$47,658,176	\$40,412,022
Contract work.....	\$626,090	\$19,953	\$606,137	\$1,542,771	\$2,168,861	\$1,421,301
Cost of supplies and materials.....	\$16,699,768	\$790,986	\$15,908,782	\$5,075,077	\$21,774,845	\$13,817,739
Miscellaneous expenses.....	\$5,357,529	\$279,485	\$5,078,044	\$1,017,856	\$6,374,885	\$6,452,701
Value of product <sup>1</sup> .....	\$82,482,052	\$5,327,726	\$77,154,326		\$82,482,052	( <sup>2</sup> )

<sup>1</sup> Includes 2,987 salaried employees whose salaries are included in amount paid wage-earners, and are not separable therefrom.

<sup>2</sup> The United States Geological Survey reports the refined metal from all ores carrying gold and silver, including the production of Alaska.

<sup>3</sup> Not reported.

The value shown in Table 44 is the same as reported for all other products of mines and mining for 1902, viz, the value realized by the operator for his product at the mine. It is the custom of the trade to compute this value by adding together the gross values of the gold and silver contents of the ore, and deducting therefrom the charges for reduction and freight, with an allowance for by-products, viz, lead, copper, zinc, etc.

The value reported at the Eleventh Census, \$99,283,732, was the coining value of fine gold and silver contents of all ores, including copper ores. Computed on the same basis, the value of the precious metal contents of all ores mined in 1902 amounted to \$137,093,515.

The gold and silver contents of the mining product of continental United States, by sources of production, are shown as follows:

SOURCE OF PRODUCTION.	GOLD.		SILVER.	
	Fine ounces.	Gross value at mine.	Fine ounces.	Gross value at mine.
All mines.....	3,242,039	\$65,628,906	54,198,344	\$27,282,107
Gold and silver mines:				
Placer.....	259,143	5,343,176	4,303	2,285
Deep.....	2,889,985	58,431,705	42,741,761	21,446,616
Copper mines.....	92,911	1,854,025	11,452,280	5,833,256

The gross value of a fine ounce of gold averaged \$20.24 and that of a fine ounce of silver \$0.50. These averages represent the rates at which the fine gold and silver contents of the ores and crude bullion were valued at the mine in computing the net value of the mining product, as explained above.

In the following statement the gold and silver contents of the ores mined in 1902 are computed at United States coining rates; the estimates of the Director of the Mint are reproduced in parallel columns. In making comparisons it must be borne in mind that in the estimates of the Director of the Mint for any given year, "only that gold [and silver] is looked upon as really produced that has been refined, made ready for the market,"<sup>1</sup> whereas the census returns represent the metallic contents of the ores, whether reduced or not, during the same year.

	ORE MINED AS REPORTED TO THE CENSUS OFFICE.		REFINED BULLION AS ESTIMATED BY THE DIRECTOR OF THE MINT. <sup>1</sup>	
	Quantity (fine ounces).	Value (coining).	Quantity (fine ounces).	Value (coining).
Total.....		\$137,093,515		\$143,292,825
Gold.....	3,242,039	67,018,890	3,466,270	71,654,200
Silver.....	54,198,344	70,074,625	55,408,000	71,638,625

<sup>1</sup> Exclusive of Alaska.

The present census of mines and quarries has traced to the mines 94 per cent of the estimated output of refined gold for 1902. The portion thus traced by the Eleventh Census was 87 per cent. The silver contents of the ores mined in 1902, as reported to the Census Bureau, vary by 2 per cent from the output of refined silver estimated for the same year by the Director of the Mint.

<sup>1</sup> Report of the Director of the Mint upon the Production of Precious Metals in the United States during the calendar year 1902, page 12.

## GRAPHITE.

Both the crystalline and the amorphous varieties of graphite are included in these statistics. The crystalline is largely used in the manufacture of crucibles, lubricants, and lead pencils; and the amorphous in the manufacture of paints, lubricants, and greases. At the census of 1880 the number of graphite mines reported was 3, situated in New York, North Carolina, and Pennsylvania. The product was given as 940 short tons of refined graphite, valued at \$49,800. At the Eleventh Census the number of mines was not given, but the product was stated to be 7,003 short tons, valued at \$72,662, mined in Michigan, New York, Pennsylvania, Rhode Island, and Wyoming. The statistics of the industry for 1902 are summarized in the following table:

TABLE 45.—Summary: 1902.

Number of mines or quarries.....	28
Number of operators.....	19
Salaried officials, clerks, etc.:	
Number.....	27
Salaries.....	\$18,924
Wage-earners:	
Average number.....	164
Wages.....	\$76,729
Contract work.....	\$900
Miscellaneous expenses.....	\$6,039
Cost of supplies and materials.....	\$51,840
Product: <sup>1</sup>	
Quantity, short tons.....	27,438
Value.....	\$227,508

<sup>1</sup> The United States Geological Survey reports 3,936,824 pounds of crystalline, valued at \$126,144, and 4,739 short tons of amorphous, valued at \$55,964, these representing the product marketed, while the census figures represent the product mined.

The greater part of the value shown is that for product refined at the mines, the statistics of mining and preparation for the market being inseparable.

There were 12 mines reported idle during 1902 in Alabama, New York, North Carolina, and Pennsylvania; and 3 in New Hampshire, New York, and Pennsylvania at which development work was reported.

The quantity and value of the yearly production of graphite in the United States and in the world, as reported by the United States Geological Survey, are given in Tables 46 and 47.

TABLE 46.—Production of crystalline and amorphous graphite in the United States: 1889 to 1902.

YEAR.	CRYSTALLINE GRAPHITE.		AMORPHOUS GRAPHITE.	
	Quantity (pounds).	Value.	Quantity (short tons).	Value.
1889.....	( <sup>1</sup> )	\$72,662		
1890.....	( <sup>1</sup> )	77,500		
1891.....	1,559,674	110,000		
1892.....	1,398,365	87,902		
1893.....	843,103	63,232		
1894.....	918,000	64,010		
1895.....	644,700	\$52,582	2,793	
1896.....	535,858	\$48,460	1,760	
1897.....	1,861,706	\$65,730	1,070	
1898.....	2,360,000	\$75,200	890	
1899.....	2,900,732	\$167,106	2,324	
1900.....	5,507,855	\$197,579	611	
1901.....	3,967,612	135,914	809	\$31,800
1902.....	3,936,824	126,144	4,739	55,964

<sup>1</sup> Quantity not reported.

<sup>2</sup> Includes the value of the amorphous product.

<sup>3</sup> Value included under that of crystalline graphite.

TABLE 47.—WORLD'S PRODUCTION OF GRAPHITE, BY COUNTRIES: 1896 TO 1901.

[Quantity in metric tons.]

COUNTRY.	1896		1897		1898		1899		1900		1901	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Total.....	56,739	\$977,405	70,546	\$1,787,185	126,752	\$9,898,790	85,282	\$3,704,942	81,194	\$1,761,113	175,427	\$5,473,166
United States.....	933	48,460	1,589	65,730	1,878	75,200	3,774	167,106	3,064	197,579	2,533	167,714
Austria.....	35,972	410,081	38,504	439,610	33,062	421,058	31,819	395,290	33,663	418,126	29,992	1,918,509
Canada.....	126	9,455	396	16,240		13,698	1,025	24,179	1,744	30,940	2,005	38,780
Ceylon.....	10,463	414,405	19,275	1,159,885	78,509	9,243,263	29,037	2,904,970	19,168	\$875,190	22,707	\$3,208,215
Germany.....	5,248	72,108	3,861	66,126	4,593	97,916	5,196	120,250	9,248	136,500	4,485	56,000
India.....			61	316	22	110	1,548	7,572	1,858	9,104	2,530	( <sup>3</sup> )
Italy.....	3,148	10,193	5,650	11,800	6,435	17,423	9,990	55,944	9,720	55,720	10,313	59,211
Japan.....	215	6,925	204	16,075	346	10,265	53	5,120	94	9,118	( <sup>3</sup> )	( <sup>3</sup> )
Mexico.....	620	5,287	907	8,663	1,857	18,237	2,305	22,847	2,561	25,650	762	7,615
Sweden.....	14	491	99	3,240	60	1,620	4535	1,674	84	3,186	56	1,900

<sup>1</sup> Latest available figures used in making up total.

<sup>2</sup> These values are taken from the official yearbooks of the United Kingdom.

<sup>3</sup> Statistics not available.

<sup>4</sup> Includes crude.

## GYPSUM.

This mineral is a hydrous sulphate of lime (calcium), and is used chiefly in the manufacture of plaster of Paris and as a fertilizer.

The statistics comprise those of gypsum in its calcined and ground form as well as in its natural state. At the census of 1850 "plaster (gypsum)" was shown as a manufacture. The number of establishments was 140, and the value of product, \$428,914. At the census of

1860 "plaster and manufactures of" was given with 307 establishments and \$1,110,854 as value of products. In 1870 "plaster, ground" was represented with 321 establishments and products valued at \$2,691,851. In 1880 no statistics were shown. At the Eleventh Census the number of establishments was not reported, but the products were given as 267,769 short tons, valued at \$764,118. The statistics for 1902 are summarized in the following table:

TABLE 48.—Summary: 1902.

Number of mines or quarries.....	62
Number of operators.....	45
Salaried officials, clerks, etc.:	
Number.....	249
Salaries.....	\$300,420
Wage-earners:	
Average number.....	1,472
Wages.....	\$759,256
Contract work.....	\$406
Miscellaneous expenses.....	\$200,769
Cost of supplies and materials.....	\$341,760
Product: <sup>1</sup>	
Quantity, short tons.....	681,638
Value.....	\$2,089,341

<sup>1</sup>The United States Geological Survey reports 816,478 short tons of crude gypsum.

There were 17 mines reported idle during 1902, in Arizona, Kansas, Missouri, New Mexico, New York, Ohio, Texas, and Virginia.

The quantity and value of the yearly production of gypsum in the United States and in the world, as reported

by the United States Geological Survey, are shown in Tables 49 and 50.

TABLE 49.—Production of gypsum in the United States: 1889 to 1902.

YEAR.	Quantity (short tons).	Value of products; crude, land plaster, and calcined.
1889.....	267,769	\$764,118
1890.....	182,995	574,523
1891.....	208,126	628,051
1892.....	256,259	696,492
1893.....	253,615	696,615
1894.....	239,312	761,719
1895.....	265,503	797,447
1896.....	224,254	573,344
1897.....	288,982	755,864
1898.....	291,638	755,280
1899.....	486,235	1,287,080
1900.....	594,462	1,627,203
1901.....	683,791	1,506,641
1902.....	816,478	2,089,341

TABLE 50.—WORLD'S PRODUCTION OF GYPSUM, BY COUNTRIES: 1893 TO 1902.

[Quantity in short tons.]

YEAR.	UNITED STATES.		FRANCE.		CANADA.		GREAT BRITAIN.		GERMAN EMPIRE.		ALGERIA.		INDIA.		CYPRUS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
1893.....	253,615	\$696,615			192,568	\$196,150	153,122	\$287,940							2,357	\$6,625
1894.....	239,312	761,719	1,693,831	\$2,891,365	223,631	202,031	169,102	321,822			36,365	\$114,900	3,548	\$1,566	3,104	9,006
1895.....	265,503	797,447	2,175,448	3,392,768	226,178	202,608	196,037	348,400	23,994	\$11,040	50,127	133,226	7,511	2,987	2,093	5,252
1896.....	224,254	573,344	1,866,498	2,661,200	207,032	178,061	213,028	361,509	31,736	14,598	41,350	114,361	8,248	3,130	1,050	2,590
1897.....	288,982	755,864	1,845,874	2,673,033	239,691	244,531	203,151	325,513	28,821	13,228	40,510	109,648	9,025	3,333	4,167	8,162
1898.....	291,638	755,280	1,931,712	2,777,816	219,256	230,440	219,549	345,882	28,315	13,166	41,156	110,660	9,249	1,503	4,279	7,551
1899.....	486,235	1,287,080	1,802,812	2,641,020	244,566	257,329	238,071	372,073	32,760	19,660	44,037	117,895	7,216	768	4,402	8,866
1900.....	594,462	1,627,203	1,761,835	2,772,221	252,001	259,009	233,002	348,210	39,103	17,199	41,446	139,190	4,855	424		
1901.....	683,791	1,506,641	2,182,229	3,449,747	293,879	340,148	224,919	344,650	135,013	23,139	38,955	182,286	( <sup>2</sup> )	( <sup>2</sup> )		
1902.....	816,478	2,089,341	( <sup>2</sup> )	( <sup>2</sup> )	332,045	356,317	251,615	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )		

<sup>1</sup>Includes Baden.

<sup>2</sup>Not yet available.

### IRON ORE.

Statistics have been published at each census from 1850 to the present, but owing to the different methods of collection and presentation, and to the defective character of the data at some of the earlier censuses, the figures for those censuses are not strictly comparable with the later statistics. The comparative statistics from 1880 to 1902, inclusive, are summarized in the following table:

TABLE 51.—Comparative summary: 1880 to 1902.

	1902	1889	1380
Number of mines.....	525	592	<sup>1</sup> 805
Number of operators.....	352	( <sup>2</sup> )	( <sup>2</sup> )
Salaried officials, clerks, etc.:			
Number.....	2,405	520	
Salaries.....	\$2,113,230	\$529,043	( <sup>2</sup> )
Wage-earners:			
Average number.....	38,851	437,707	<sup>3</sup> 31,668
Wages.....	\$21,531,792	\$13,880,108	\$9,538,117
Contract work.....	\$425,292	\$1,578,010	( <sup>2</sup> )
Miscellaneous expenses.....	\$8,257,714	\$3,795,509	( <sup>2</sup> )
Cost of supplies and materials.....	\$9,005,608	\$4,998,988	( <sup>2</sup> )
Product: <sup>4</sup>			
Quantity, long tons.....	35,567,410	14,518,041	77,120,362
Value.....	\$65,465,321	\$33,351,978	\$23,156,957

<sup>1</sup> Establishments.

<sup>2</sup> Not reported.

<sup>3</sup> Includes 1,253 "number of administrative force," whose salaries are included with wages.

<sup>4</sup> The United States Geological Survey reports 35,554,135 long tons, valued at \$65,412,950, which does not include 13,275 long tons of manganese iron ore, valued at \$52,371, used in the manufacture of spiegeleisen.

<sup>5</sup> Report on Mining Industries, Tenth Census, given as short tons, 7,974,506.

<sup>6</sup> Not reported separately.

<sup>7</sup> Includes foremen.

These statistics are for the production of all kinds of iron ore, the red and brown hematites, magnetites, and carbonates, which include not alone ore used in the manufacture of pig iron, but also manganese iron ore used in the production of spiegeleisen and the argenteiferous manganese iron ore used as a flux in the smelting of ore containing precious metals, and as a "fix" in puddling. The greater portion of the product reported for Colorado is of the latter class. Its precious-metal contents alone are not sufficiently valuable to pay for smelting, but the iron and manganese it contains render it especially valuable as a fluxing medium when mixed with gold and silver ores in the smelter.

The statistics for the production of ochers used in the manufacture of metallic paints are not included here, but are shown under the classification "mineral pigments."

There were 220 mines reported idle during 1902, distributed over 29 states and territories, and there were 37 in 10 states at which development work only was reported.

The quantity of the annual production of iron ore in the United States, as published by the United States Geological Survey, is shown in the following table:

TABLE 52.—Production of iron ore: 1889 to 1902.

YEAR.	Quantity (long tons).	YEAR.	Quantity (long tons).
1889.....	14,518,041	1896.....	16,605,449
1890.....	16,036,043	1897.....	17,518,046
1891.....	14,691,178	1898.....	19,433,716
1892.....	16,296,666	1899.....	24,683,173
1893.....	11,587,629	1900.....	27,553,161
1894.....	11,879,679	1901.....	28,887,479
1895.....	15,957,614	1902.....	35,554,135

## LEAD AND ZINC ORE.

This class embraces all nonargentiferous lead and zinc ores, which usually occur together. Auriferous and argentiferous lead and zinc ores are included in the statistics of gold and silver mines.

The comparative statistics for 1889 and 1902 are summarized in the following table:

TABLE 53.—Summary: 1889 and 1902.

	1902	1889
Number of mines.....	559	(1)
Number of operators.....	557	(1)
Salaried officials, clerks, etc.:		
Number.....	910	(2)
Salaries.....	\$826,327	\$21,033
Wage-earners:		
Average number.....	7,881	(5)
Wages.....	\$4,329,271	\$1,220,766
Contract work.....	\$108,607	\$34,511
Miscellaneous expenses.....	\$2,092,001	\$242,649
Cost of supplies and materials.....	\$2,511,657	\$407,938
Product: <sup>3</sup>		
Quantity, short tons.....	623,662	284,741
Value.....	\$14,600,177	\$4,804,179

- <sup>1</sup> Not reported.  
<sup>2</sup> Reports incomplete.  
<sup>3</sup> The United States Geological Survey reports the refined metal.

In the following statement the output of lead and zinc ores is combined with the lead and zinc contents of all other ores mined in 1902. For argentiferous and copper ores, the fine lead and zinc contents are shown, their values representing the gross value of the fine lead and zinc contents at the mine. For nonargentiferous lead and zinc ores the quantity of ore, rough or dressed, is shown, and the net value of the ore at the mine.

CLASS OF MINE.	LEAD.		ZINC.	
	Short tons.	Value.	Short tons.	Value.
Total.....	338,125	\$18,181,013	527,121	\$9,006,361
Gold and silver.....	205,519	12,311,239	35,789	340,686
Lead-zinc.....	132,350	5,850,721	491,332	8,665,675
Copper.....	276	19,053		

The United States Geological Survey reports the total lead contents of domestic ores smelted in the United States as 280,797 tons, of which 79,445 tons came from the nonargentiferous lead mines of Missouri, Kansas, Wisconsin, Illinois, Iowa, Virginia, and Kentucky, and 201,352 tons from argentiferous lead mines. The census returns from argentiferous lead and copper mines summarized in the statement preceding show 205,795 tons as the lead contents of the argentiferous ores

mined in 1902—i. e., 4,443 tons, or 2 per cent in excess of the quantity reported by the smelters to the United States Geological Survey. The quantity of nonargentiferous lead ore produced in 1902, according to census reports from the mines, was 132,330 tons. The fine lead contents of the same class of ore smelted in 1902, according to reports from the smelters received by the United States Geological Survey, were 79,445 tons.

The United States Geological Survey reports the production of spelter (which is the commercial designation of refined zinc) as 156,927 short tons for the year 1902.

## LITHIUM ORE.

The statistics here shown are for lithium minerals and not for the metal or salts produced from them. The salts are used principally in the preparation of mineral waters and effervescing lithia tablets.

The production of lithium minerals has not been reported at any prior census, and there are, therefore, no comparative statistics available. The statistics for 1902 are summarized in the following table:

TABLE 54.—Summary: 1902.

Number of mines.....	13
Number of operators.....	3
Salaried officials, clerks, etc.:	
Number.....	1
Salaries.....	\$600
Wage-earners:	
Average number.....	6
Wages.....	\$3,744
Miscellaneous expenses.....	\$200
Cost of supplies and materials.....	\$1,265
Product:	
Quantity, short tons.....	1,245
Value.....	\$25,750

<sup>1</sup> Includes 2 mines in California and 1 in South Dakota.

Two of the active mines produced lepidolite and one spodumene, lepidolite constituting over 70 per cent of the total value of the product. One mine in South Dakota was reported idle during 1902.

The quantity of the yearly production of lithium minerals, as stated by the United States Geological Survey for 1900, was 440 tons, the value not being stated. There were in addition between 75 and 100 tons obtained for experimental purposes. According to the same authority the production for 1901 was 1,750 tons, valued at \$43,200.

The world's annual production of lithium carbonate, which is the principal salt used, has been variously estimated at from 50,000 to 150,000 pounds. Most of this is manufactured in Germany, and a large proportion of the lithium minerals mined in the United States have been shipped to Germany, being returned in the form of lithium carbonate.

## MAGNESITE.

This is magnesium carbonate, and it is used chiefly in the manufacture of magnesite bricks for the refractory lining of furnaces. Only 1 mine, located in Tulare county, Cal., was productive in 1902. It is impossible, therefore, without disclosing the operations of individual

establishments, to publish complete statistics separately for this branch of the mining industry. The quantity produced was 3,086 short tons of crude mineral. Of this product 2,236 short tons were calcined, making 1,050 short tons of calcined magnesite, valued at \$15,780. The remaining 850 short tons of crude magnesite were valued at \$3,859.

There were 7 mines, all in California, reported idle during 1902.

The quantity and value of crude magnesite produced in the United States, as reported by the United States Geological Survey, are given in the following table. The statistics represent the magnesite marketed or sold, except in 1902, when they are for the magnesite actually mined:

TABLE 55.—Production of magnesite: 1891 to 1902.

YEAR.	Quantity (short tons).	Value.
1891.....	499	\$4,390
1892.....	1,004	10,040
1893.....	704	7,040
1894.....	1,440	10,240
1895.....	2,220	17,000
1896.....	1,500	11,000
1897.....	1,143	13,671
1898.....	1,263	19,075
1899.....	1,280	18,480
1900.....	2,252	19,338
1901.....	13,172	48,057
1902.....	3,466	21,362

The bulk of the world's production of magnesite is obtained from deposits in Austria and Greece, and the imports, chiefly from these countries, during 1902, of both crude and calcined, amounted to 49,786 short tons, valued at \$373,928, compared with 33,461 short tons in 1901.

#### MANGANESE ORE.

The statistics include those ores carrying over 44.3 per cent of metallic manganese. The manganiferous iron ores are treated under iron ore and the manganiferous silver ores, in some cases, under silver and in other cases under iron ore, according to the relative commercial value of the silver and iron contents. The chief use of manganese is in the manufacture of steel and of chemicals, and it is of value as a flux.

The first census statistics for manganese ore appeared for 1860. One mine in Virginia was reported with value of products of \$5,250. At the census of 1880, 6 mines were shown, and the products were stated as 10,713 long tons, valued at \$96,935. It was also stated that there were reported, in addition, 637 tons "without details as to mines, etc." No value was given, but if computed according to the value shown for the 10,713 tons and added to that, the total value of product would be \$102,698. Five of these mines were in Virginia and 1 was in Georgia. At the Eleventh Census the number of mines was not stated, but the product was given as 24,197 long tons, valued at \$240,559. The production reported was in Arkansas, California, Georgia, Nevada, North Carolina, South Carolina, Tennessee,

Vermont, and Virginia. The statistics for 1902 are summarized in the following table:

TABLE 56.—Summary: 1902.

Number of mines.....	19
Number of operators.....	19
Salaried officials, clerks, etc.:	
Number.....	18
Salaries.....	\$9,395
Wage-earners:	
Average number.....	194
Wages.....	\$74,924
Miscellaneous expenses.....	\$3,845
Cost of supplies and materials.....	\$17,228
Product:	
Quantity, long tons.....	16,477
Value.....	\$177,911

The preparation usually given the ore at the mine is crushing, washing, and screening.

There were 68 mines—in Arkansas, California, Georgia, Indian Territory, Maine, Montana, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin—reported idle during 1902, and 3 in Colorado, Utah, and Virginia, at which development work was reported.

The annual production of manganese ore in the United States, as reported by the United States Geological Survey, is shown in the following table:

TABLE 57.—Production of manganese ore: 1889 to 1902.

YEAR.	Quantity (long tons).	Value.
1889.....	24,197	\$240,559
1890.....	25,684	219,050
1891.....	23,416	239,129
1892.....	13,613	129,586
1893.....	7,718	66,614
1894.....	6,308	53,635
1895.....	9,547	71,769
1896.....	10,088	90,727
1897.....	11,108	95,505
1898.....	15,957	129,185
1899.....	9,935	82,278
1900.....	11,771	100,289
1901.....	11,995	116,722
1902.....	16,477	177,911

#### MARL.

The statistics for marl relate to the product dug and used as a fertilizer, and are confined to the greensand deposits extending from New Jersey through Delaware, Maryland, and Virginia. The calcareous marl excavated and used by the manufacturers of cement is included in the statistics for cement. Of the total quantity shown, crude marl contributed 8,172 short tons, and dried and ground marl 4,267 short tons. At the Eleventh Census a product of 139,522 short tons was reported, valued at \$63,956. The production was limited to New Jersey, Virginia, North Carolina, Alabama, and Arkansas. The statistics for 1902 are summarized in the following table:

TABLE 58.—Summary: 1902.

Number of mines or quarries.....	11
Number of operators.....	11
Salaried officials, clerks, etc.:	
Number.....	2
Salaries.....	\$2,100
Wage-earners:	
Average number.....	13
Wages.....	\$1,769
Miscellaneous expenses.....	\$1,407
Cost of supplies and materials.....	\$2,755
Product:	
Quantity, short tons.....	12,439
Value.....	\$12,741

There were 104 mines and quarries reported idle during 1902, all in New Jersey.

The quantity and value of the yearly production of marl, as reported by the United States Geological Survey, are shown in the following table:

TABLE 59.—Production of marl: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	189,522	\$63,956
1890.....	153,620	69,880
1891.....	136,000	67,500
1892.....	125,000	65,000
1893.....	75,000	40,000
1894.....	75,000	40,000
1895.....	60,000	30,000
1896.....	60,000	30,000
1897.....	60,000	30,000
1898.....	60,000	30,000
1899.....	60,000	30,000
1900.....	60,000	30,000
1901.....	99,880	124,880
1902.....	12,439	12,741

#### MICA.

The variety of mica most commonly found and mined is muscovite. Sheet or plate mica is used chiefly for stoves, chimneys for incandescent lights, and for the insulation of electrical apparatus. Scrap mica is ground to a flour and used in the manufacture of wall papers, lubricants, fireproofing materials, novelties, etc. The statistics are for both sheet and scrap.

Census statistics for mica first appeared in the census of 1870, when 1 mine was reported in Mitchell county, N. C., the value of the product being given as \$7,000. At the census of 1880, 22 mines were reported, 17 in North Carolina, 3 in New Hampshire, and 1 each in Maine and Massachusetts, with a total value of product of \$127,825. At the Eleventh Census the number of mines was not given, but the quantity was reported as 49,500 pounds of cut mica, valued at \$50,000, and 196 short tons of scrap mica, valued at \$2,450. This production was in New Hampshire, North Carolina, Virginia, and South Dakota. The statistics for 1902 are summarized in the following table:

TABLE 60.—Summary: 1902.

Number of mines.....	49
Number of operators.....	38
Salaried officials, clerks, etc.:	
Number.....	21
Salaries.....	\$13,444
Wage-earners:	
Average number.....	98
Wages.....	\$44,048
Miscellaneous expenses.....	\$12,914
Cost of supplies and materials.....	\$11,961
Product:	
Total value.....	\$118,849
Cut or sheet mica, pounds.....	373,266
Value.....	\$83,843
Scrap or waste mica, short tons.....	1,028
Value.....	\$13,081
Rough mica, as mined, short tons.....	372
Value.....	\$21,925

The statistics given for 1902 include such manufacturing processes as are necessary at mines to prepare the mica for market. The scrap mica is prepared by removing the adhering fragments of flint and feldspar and such parts of the mica itself as contain foreign ingredients. For sheet mica the blocks as mined are split into sheets and cut to a size.

There were 36 mines—in Alabama, Georgia, Idaho, Nevada, New Hampshire, New Mexico, North Carolina, Ohio, Pennsylvania, South Dakota, and Vermont—reported idle during 1902.

The quantity and value of the yearly production of mica, as reported by the United States Geological Survey, are shown in the following table:

TABLE 61.—Production of mica: 1889 to 1902.

YEAR.	Total value.	CUT OR SHEET.		SCRAP OR WASTE.		ROUGH AS MINED.	
		Quantity (pounds).	Value.	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1889.....	\$50,000	49,500	\$50,000	( )	( )	( )	( )
1890.....	75,000	60,000	75,000	( )	( )	( )	( )
1891.....	100,000	75,000	100,000	( )	( )	( )	( )
1892.....	100,000	75,000	100,000	( )	( )	( )	( )
1893.....	88,929	61,111	88,929	( )	( )	( )	( )
1894.....	52,388	35,943	52,388	( )	( )	( )	( )
1895.....	55,831	44,325	55,831	( )	( )	( )	( )
1896.....	67,191	49,156	65,441	222	\$1,750	( )	( )
1897.....	95,226	82,676	80,774	740	14,452	( )	( )
1898.....	131,098	129,520	103,584	3,999	27,564	( )	( )
1899.....	121,465	108,570	70,587	1,505	50,878	( )	( )
1900.....	147,960	456,283	92,758	5,497	55,202	( )	( )
1901.....	118,573	360,080	98,859	2,171	19,719	( )	( )
1902.....	118,849	373,266	83,843	1,028	13,081	372	\$21,925

<sup>1</sup> Not given.

<sup>2</sup> Includes value of 156 short tons of scrap.

<sup>3</sup> Includes value of 191 short tons of scrap.

<sup>4</sup> Includes value of 148 short tons of scrap.

#### MINERAL PIGMENTS, CRUDE.

These statistics are for the production of ores used in the manufacture of mineral paints, consisting of iron ores (red and brown hematite), which are not included with iron ores used in the manufacture of iron; clay or other earths, containing iron, used in making yellow, red, and brown pigments (such as ocher, umber, sienna, etc.), carbonate of zinc, slate, and soapstone used as a pigment. Mineral paints are used chiefly where great resistance to the action of the weather is desired.

As early as 1850 the census statistics for ocher, which is a subclassification of mineral pigments, crude, appeared among statistics of manufactures. There were 2 establishments in Vermont, with a product valued at \$9,600. At the census of 1860, 1 establishment was shown, also among manufacturing establishments, in Berkshire county, Mass., with a product valued at \$1,080. At the census of 1870, 4 establishments, all in Bennington county, Vt., were included in the mining classification of stone, having a product valued at \$15,000. Among the mining industries reported at the census of 1880, 7 establishments were reported for ocher, 1 in New Jersey, and 3 each in Vermont and Virginia. The value of products was \$135,840. At the Eleventh Census the number of establishments was not given, but the value of the product was stated to be \$463,766, the quantity being given as 36,184 short tons. These included ocher and metallic paint. The ocher establishments were reported from Alabama, Colorado, Georgia, Maryland, Massachusetts, New Jersey, Pennsylvania, Vermont, Virginia, and Wisconsin; those for metallic paints from Alabama, Colorado, New York, Ohio, Pennsylvania, Tennessee, and Wisconsin.

The statistics for 1902 are summarized in the following table:

TABLE 62.—*Summary: 1902.*

Number of mines or quarries.....	35
Number of operators.....	35
Salaried officials, clerks, etc.:	
Number.....	63
Salaries.....	\$53,593
Wage-earners:	
Average number.....	256
Wages.....	\$106,087
Miscellaneous expenses.....	\$24,893
Cost of supplies and materials.....	\$68,073
Product: <sup>1</sup>	
Quantity, short tons.....	35,479
Value.....	\$360,885

<sup>1</sup>The United States Geological Survey reports 73,049 short tons of mineral paints, manufactured and sold, valued at \$944,332. Census figures are for the crude mineral pigments.

There were 13 mines—1 in Alabama, 3 in California, 2 in Georgia, 1 in Michigan, 2 in Missouri, 1 in Ohio, 1 in Pennsylvania, 1 in Tennessee, and 1 in Vermont—reported idle during 1902.

The United States Geological Survey has published annual statistics concerning the quantity and value of mineral paints, beginning with 1894, and of some of the subclassifications from various dates, but these statistics are not comparable with those of the census, for the reason that they include the manufacture of the ore into paints and are not limited to the value of the crude ore at the mines. The census statistics for 1902 include only that part of the manufacture done at the mines and which it is impossible to segregate, the mining and the manufacturing being in such cases accomplished with the same capital and under the same management.

## MONAZITE.

This mineral is mined from placer deposits and is of value for its oxides of thorium, cerium, lanthanum, and didymium, which are used in the manufacture of cylindrical hoods for incandescent gas lights. The cerium oxide is also used in small amounts in pharmacy. There is no mention in any previous census of statistics for the monazite industry, for the reason that the production of this mineral for commercial purposes did not really begin until 1893. The existence of monazite in commercial quantities in North Carolina was known as early as 1879, but it was not until 1887 that the first shipment was made. During that year 12 tons of monazite sand were shipped for experimental purposes. In 1888 and 1889 a few tons were shipped to the North for manufacturing purposes. The statistics for 1902 are summarized in the following table:

TABLE 63.—*Summary: 1902.*

Number of mines.....	23
Number of operators.....	22
Salaried officials, clerks, etc.:	
Number.....	3
Salaries.....	\$2,100
Wage-earners:	
Average number.....	88
Wages.....	\$25,318
Miscellaneous expenses.....	\$2,083
Cost of supplies and materials.....	\$256
Product:	
Quantity, pounds.....	802,000
Value.....	\$64,160

All of the monazite shown in this report is prepared for the market in some way, either simply by washing or by some additional method of concentration. One mine in North Carolina was reported idle during 1902.

The quantity and value of the yearly production of monazite, as reported by the United States Geological Survey, are shown in the following table:

TABLE 64.—*Production of monazite: 1893 to 1902.*

YEAR.	Quantity (pounds).	Value.
1893.....	130,000	\$7,600
1894.....	646,855	36,193
1895.....	1,573,000	137,150
1896.....	30,000	1,500
1897.....	44,000	1,980
1898.....	250,776	13,542
1899.....	350,000	20,000
1900.....	908,000	48,805
1901.....	748,736	59,262
1902.....	802,000	64,160

## NATURAL GAS.

Although the existence of natural gas in this country had been known for many years, it was not produced in commercial quantities sufficient to warrant statistical treatment until during the decade ending with 1890. The reports of the Eleventh Census are the first in which the industry is presented. The number of wells producing at the close of December, 1889, was given as 2,247, and the amount received for the gas consumed as \$11,044,858. The value of the fuel displaced was computed at \$21,097,099, including that displaced by gas used at oil pipe line stations, in pumping and drilling oil wells, and for other uses. This was regarded as the actual value. The value given for 1902 is the amount received from the sale of the gas. The quantity and value of petroleum produced from natural gas wells are included in the statistics for petroleum, but the statistics pertaining to wages, employees, and other expenses are included under natural gas.

The statistics for 1889 and 1902 are summarized in the following table:

TABLE 65.—*Comparative summary: 1889 and 1902.*

	1902	1889
Number of wells.....	15,806	2,247
Number of operators.....	1,967	( <sup>1</sup> )
Salaried officials, clerks, etc.:		
Number.....	1,923	785
Salaries.....	\$1,810,337	\$525,956
Wage-earners:		
Average number.....	4,678	5,899
Wages.....	\$2,936,279	\$1,210,433
Contract work.....	\$4,459,001	( <sup>1</sup> )
Miscellaneous expenses.....	\$5,912,257	( <sup>1</sup> )
Supplies and materials.....	\$6,607,255	\$13,184,497
Value of product.....	\$30,867,863	\$21,097,099

<sup>1</sup> Not reported.

There were 51 wells—in Indian Territory, Indiana, Kansas, Kentucky, New York, Ohio, and Pennsylvania reported idle during 1902; and 94—in Arkansas, Indian Territory, Indiana, Kansas, Kentucky, Missouri, New

York, Ohio, Pennsylvania, Tennessee, Texas, and West Virginia—at which development work was reported.

The value of the yearly production as reported by the United States Geological Survey is shown in the following table:

TABLE 66.—Production of natural gas: 1889 to 1902.

YEAR.	Value.	YEAR.	Value.	YEAR.	Value.
1889.....	\$21,107,099	1894.....	\$13,954,400	1899.....	\$20,074,873
1890.....	18,792,725	1895.....	13,006,650	1900.....	23,698,677
1891.....	15,500,064	1896.....	13,002,512	1901.....	27,066,074
1892.....	14,800,714	1897.....	13,826,422	1902.....	30,867,668
1893.....	14,346,250	1898.....	15,296,813		

<sup>1</sup> Does not include value of gas produced in Canada and consumed in the United States.

#### PETROLEUM.

Census statistics for the production of crude petroleum appeared first at the census of 1860, and were shown at each subsequent census. These statistics are not strictly comparable in all respects, owing to the different methods of collection and presentation that were followed at the several censuses. At the present census and at all prior censuses, except 1880, the data reported relate exclusively to the work at the wells in the production of crude petroleum. The statistics from 1860 to 1902, inclusive, are summarized in the following table:

TABLE 67.—Comparative summary: 1860 to 1902.

	1902	1889	1880 <sup>1</sup>	1870	1860 <sup>2</sup>
Number of wells....	118,671	35,163	.....	\$2,314	.....
Number of operators	29,522	.....	86	.....	*64
Salaried officials, clerks, etc.:					
Number.....	3,033	173	.....	.....	.....
Salaries.....	\$2,986,768	\$163,156	.....	.....	.....
Wage-earners:					
Average number.....	17,552	\$22,366	\$9,869	\$4,488	\$922
Wages.....	\$13,242,361	\$8,383,744	\$4,381,572	\$3,995,030	\$339,360
Contract work.....	\$12,956,631	.....	.....	.....	.....
Miscellaneous expenses.....	\$15,811,726	.....	.....	.....	.....
Cost of supplies and materials.....	\$17,781,512	\$9,505,935	\$34,999,101	\$1,401,945	\$2,167,108
Product: <sup>7</sup>					
Quantity, barrels of 42 gallons.....	89,275,302	35,163,513	.....	4,315,798	.....
Value.....	\$71,897,739	\$26,963,340	\$43,705,218	\$19,304,224	\$4,254,987

<sup>1</sup> The statistics for 1880 are for "petroleum refining." The crude petroleum produced during 1880 was 26,032,421 barrels, valued at \$24,600,638.

<sup>2</sup> Classified as "oil, coal."

<sup>3</sup> Tabulated as "establishments."

<sup>4</sup> Includes foremen; their salaries are included in wages.

<sup>5</sup> Includes salaried officials, clerks, etc.; their salaries are included in wages.

<sup>6</sup> Includes \$16,340,561 paid for 17,417,456 barrels of crude petroleum, and also amount paid for fuel and miscellaneous expenses.

<sup>7</sup> The United States Geological Survey reports 88,766,916 barrels valued at \$71,178,910, which represents the product marketed. The census figures represent the petroleum produced.

It will be observed from the foregoing table that there was a substantial increase from 1889 to 1902 in all essential items. The apparent decrease in the wage-earners during the same period is caused almost entirely by the difference in the methods of computing the average number at the two censuses, and is not an actual condition, as is proven by the large increase in the wages paid.

There were 312 wells reported idle during 1902, in Alabama, California, Indian Territory, Indiana, Kentucky, Louisiana, Texas, Utah, West Virginia, and Wyoming, and 615 at which development work was reported in Arizona, California, Colorado, Florida, Indian Territory, Indiana, Kansas, Kentucky, Louisiana, Missouri, New Mexico, Oklahoma, Tennessee, Texas, Utah, and Wyoming.

The quantity and value of the yearly production of crude petroleum and the quantity produced in the world, by countries, as reported by the United States Geological Survey, are shown in Tables 68 and 69.

TABLE 68.—Production of crude petroleum in the United States: 1889 to 1902.

YEAR.	Barrels of 42 gallons.	Value.
1889.....	35,163,513	\$26,963,340
1890.....	45,823,572	35,365,106
1891.....	54,292,655	30,526,553
1892.....	50,509,657	25,901,483
1893.....	48,431,066	28,932,326
1894.....	49,344,516	35,622,096
1895.....	52,892,276	57,691,279
1896.....	160,980,361	68,518,709
1897.....	160,475,516	40,929,611
1898.....	155,364,233	44,198,359
1899.....	157,070,850	64,608,904
1900.....	63,620,529	75,752,691
1901.....	69,389,194	66,417,335
1902.....	88,766,916	71,178,910

<sup>1</sup> In addition to this amount, 4,325 barrels of crude oil were produced in Kentucky and Tennessee in 1896; 4,377 barrels in 1897; 19,126 barrels in 1898; and 13,578 barrels in 1899, for which, as none was sold or used, no value could be given.

TABLE 69.—World's production of crude petroleum by countries: 1900, 1901, and 1902.

[Barrels of 42 gallons.]

COUNTRY.	1900	Per cent of total.	1901	Per cent of total.	1902	Per cent of total.
Total.....	148,114,975	100.0	165,773,861	100.0	185,151,089	100.0
United States.....	63,620,529	42.9	69,389,194	41.9	88,766,916	47.9
Canada.....	692,650	0.5	572,500	0.3	520,000	0.3
Peru.....	102,976	0.1	72,261	( <sup>1</sup> )	60,000	( <sup>1</sup> )
Russia.....	7,779,417	51.2	85,168,556	51.4	80,540,045	43.5
Gallia.....	2,346,505	1.6	3,251,544	2.0	4,142,160	2.2
Sumatra, Java, and Borneo.....	1,967,700	1.3	3,088,700	1.8	5,860,000	3.2
Roumania.....	1,628,535	1.1	1,406,160	0.8	2,059,830	1.1
India.....	1,078,284	0.7	1,430,716	0.9	1,617,863	0.9
Japan.....	528,000	0.4	1,100,000	0.7	1,198,000	0.7
Germany.....	358,297	0.2	313,630	0.2	353,675	0.2
Italy.....	12,102	( <sup>1</sup> )	10,100	( <sup>1</sup> )	12,000	( <sup>1</sup> )
All other countries.....	.....	.....	20,000	( <sup>1</sup> )	26,000	( <sup>1</sup> )

<sup>1</sup> Less than one-tenth of 1 per cent.

#### PHOSPHATE ROCK.

Phosphate is a name applied to the salts of phosphoric acid, chiefly orthophosphoric acid, and phosphate rock is a name given to the somewhat variable compound of phosphoric acid and calcium, or, more rarely, alumina and iron, used in the manufacture of commercial fertilizers.

At the census of 1880 appeared the first census statistics for phosphate rock. They were shown in the volume on manufactures, among chemical products. The



number of establishments reporting was 21, all in South Carolina, with a product of 211,377 long tons, valued at \$1,123,823. At the Eleventh Census the number of establishments was not reported, except in the state of South Carolina, where there were 25. The other states represented were Florida and North Carolina. The product reported was 550,245 long tons, valued at \$2,937,776. The statistics for 1902 are summarized in the following table:

TABLE 70.—Summary: 1902.

Number of mines or quarries.....	115
Number of operators.....	87
Salaried officials, clerks, etc.:	
Number.....	891
Salaries.....	\$355,204
Wage-earners:	
Average number.....	5,971
Wages.....	\$1,930,093
Contract work.....	\$157,402
Miscellaneous expenses.....	\$430,475
Cost of supplies and materials.....	\$799,414
Product: <sup>1</sup>	
Quantity, long tons.....	1,548,720
Value.....	\$4,922,943

<sup>1</sup>The United States Geological Survey reports 1,490,314 short tons, valued at \$4,693,444, which is the product marketed. The census figures represent the product mined.

There were 19 mines in Florida, South Carolina, and Tennessee reported idle during 1902, and 2 in Florida and North Carolina at which development work was reported.

The quantity and value of the yearly production of phosphate rock in the United States and in the world, as reported by the United States Geological Survey, are shown in Tables 71 and 72.

TABLE 71.—Production of phosphate rock in the United States: 1889 to 1902.

YEAR.	Quantity (long tons).	Value.
1889.....	550,245	\$2,937,776
1890.....	510,499	3,213,795
1891.....	587,988	3,651,150
1892.....	681,571	3,296,127
1893.....	941,368	4,136,070
1894.....	996,949	3,479,547
1895.....	1,038,551	3,606,094
1896.....	930,779	2,803,372
1897.....	1,039,345	2,673,202
1898.....	1,308,885	3,453,460
1899.....	1,515,702	5,084,076
1900.....	1,491,216	5,359,248
1901.....	1,483,723	5,316,403
1902.....	1,490,314	4,693,444

TABLE 72.—WORLD'S PRODUCTION OF PHOSPHATE ROCK, BY COUNTRIES: 1896 TO 1901.

[Quantity in metric tons.]

COUNTRY.	1896		1897		1898		1899		1900		1901	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
United States.....	945,982	\$2,803,372	1,056,822	\$2,673,202	1,330,264	\$3,453,460	1,540,506	\$5,084,076	1,515,179	\$5,359,248	1,507,681	\$5,316,403
Algeria.....	165,738	500,905	228,141	912,564	269,500	1,078,000	324,983	1,299,932	319,422	1,277,658	265,000	1,060,000
Belgium.....	1,297,470	537,320	1,350,056	436,762	1,156,929	308,230	1,190,090	342,180	1,215,670	367,164	222,520	361,398
Canada.....	517	3,420	824	3,941	685	3,665	2,722	18,000	1,284	7,105	937	6,280
France.....	582,667	3,502,027	585,390	2,852,887	568,558	3,115,958	645,868	3,334,145	587,919	2,827,291	535,676	2,614,543
Norway.....	1,106	17,280	872	12,960	3,593	53,252	1,500	22,140	800	4,445	( <sup>2</sup> )	.....
Redonda (Br. West Indies).....			812	5,525	750	4,725	1,507	9,270	2,230	13,720	( <sup>2</sup> )	Nil.
Russia.....	8,776	11,065	5,917	22,132	1,870	4,784	16,943	58,640	25,663	( <sup>2</sup> )	( <sup>2</sup> )	.....
Spain.....	770	3,080	2,084	16,672	4,500	46,003	8,510	35,100	4,170	18,590	4,220	16,880
United Kingdom.....	3,048	26,250	2,032	17,500	1,575	13,565	1,469	12,645	630	5,425	71	680

<sup>1</sup> Cubic meters.<sup>2</sup> Statistics not yet available.<sup>3</sup> Value not reported.

## PRECIOUS STONES.

Statistics for precious stones were unknown to the census until 1889. In that year the value of products reported was \$188,807. Up to that time there had been very little mining for precious or semiprecious stones, and then only at irregular periods. The statistics for 1902 are summarized in the following table:

TABLE 73.—Summary: 1902.

Number of mines or quarries.....	46
Number of operators.....	460
Salaried officials, clerks, etc.:	
Number.....	22
Salaries.....	\$28,687
Wage-earners:	
Average number.....	108
Wages.....	\$88,017
Miscellaneous expenses.....	\$7,481
Cost of supplies and materials.....	\$17,781
Value of product.....	\$328,450

In the United States precious stones are generally found by accident, or in prospecting for, working, or developing mines of other minerals, or in the working of gravels containing gold, monazite, etc. With the excep-

tion of the figures relating to the number of operators and the value of production, the statistics are for properties operated by companies which carry on the search for stones with some approach to regularity. These companies produce sapphire, tourmaline, beryl, chryso-prase, opal, and turquoise. In addition to these, certain quantities of emerald, peridot, several varieties of quartz—such as rock-crystal, smoky, rose, gold, and rutilated quartz—amethyst, agate and moss agate, and silicified wood, also garnet (pyrope and rhodolite), amazon stone, chlorastrolite, mesolite, pyrite, anthra-cite ornaments, and catlinite were produced in this country during 1902, but not on a large scale or under conditions suitable to serve as a basis for statistical treatment.

The value of product as shown in the tables is the value as mined or found.

There were 3 mines in California, New Mexico, and North Carolina reported idle during 1902.

The production of precious stones, as reported by the United States Geological Survey, is given in the following table:

TABLE 74.—Production of precious stones in the United States: 1896 to 1902.

STONE.	1896	1897	1898	1899	1900	1901	1902
Total .....	\$97,850	\$130,675	\$160,920	\$185,770	\$238,170	\$289,050	\$328,450
Diamond.....	None.	None.	None.	300	150	100	None.
Sapphire.....	10,000	25,000	55,000	68,000	75,000	90,000	115,000
Ruby.....	1,000	None.	2,000	3,000	3,000	500	None.
Topaz.....	200	None.	100	None.	None.	None.	None.
Beryl (aquamarine, etc.).....	700	1,500	2,200	4,000	11,000	5,000	4,000
Emerald.....	None.	25	50	50	4,000	1,000	1,000
Tourmaline.....	3,000	9,125	4,000	2,000	2,500	15,000	30,000
Peridot.....	500	500	500	500	500	500	500
Quartz, crystal.....	7,000	12,000	17,000	12,000	10,000	10,000	12,000
Smoky quartz.....	2,500	1,000	1,000	None.	1,000	1,000	2,000
Rose quartz.....	500	None.	100	100	100	150	200
Amethyst.....	500	200	250	250	500	500	2,000
Prase.....	100	None.	None.	None.	None.	None.	None.
Gold quartz.....	10,000	5,000	5,000	500	2,000	2,000	3,000
Rutilated quartz.....	500	None.	100	50	50	50	100
Dumortierite in quartz.....	50	None.	None.	None.	None.	None.	None.
Tourmalinated quartz.....	None.	None.	None.	None.	None.	1,000	None.
Agate.....	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Moss agate.....	1,000	1,000	1,000	1,000	1,000	500	500
Chrysoptase.....	500	None.	100	100	100	1,500	5,000
Silicified wood (silicified and opalized).....	4,000	2,000	2,000	3,000	5,000	7,000	7,000
Opal.....	200	200	200	None.	None.	None.	150
Garnet (almandite).....	500	7,000	5,000	5,000	500	100	None.
Rhodolite.....	None.	None.	None.	None.	20,000	21,000	1,500
Garnet (pyrope).....	2,000	2,000	2,000	2,000	1,000	1,000	1,000
Topazolite.....	100	None.	None.	None.	None.	None.	None.
Amazon stone.....	1,000	500	500	250	250	200	500
Oligoclase.....	250	25	10	20	20	None.	None.
Moonstone.....	500	None.	None.	None.	None.	None.	None.
Turquoise.....	40,000	55,000	50,000	72,000	82,000	118,000	130,000
Uralite (compact variscite).....	500	100	100	100	100	250	None.
Chlorastrolite.....	500	500	5,000	3,000	3,000	3,000	4,000
Mesolite (thomsonite, so called).....	500	500	1,000	1,000	1,000	1,000	1,000
Prehnite.....	100	100	100	50	50	None.	None.
Diopside.....	200	100	None.	None.	None.	None.	None.
Epidote.....	250	None.	None.	None.	None.	None.	None.
Prrite.....	1,000	1,000	1,000	1,000	2,000	3,000	3,000
Malachite.....	None.	None.	None.	250	200	100	None.
Rutile.....	100	800	110	200	100	None.	None.
Anthracite (ornaments).....	2,000	1,000	1,000	2,000	2,000	2,000	2,000
Catlinite (pipestone).....	3,000	2,000	2,000	2,000	2,000	2,000	2,000
Fossil coral.....	1,000	500	500	50	50	100	None.
Arrow points.....	1,000	1,000	1,000	1,000	1,000	500	None.

#### QUICKSILVER.

Quicksilver, as it is popularly called, but mercury in its scientific designation, is a metal of a silver-white color and brilliant metallic luster, fluid at ordinary temperature. It occurs native, but the chief ore from which it is obtained is cinnabar, which is the sulphide. The chief use of mercury is in the metallurgical treatment of gold and silver ores by amalgamation. It is also employed in medicine and in the manufacture of vermilion, a pigment.

Federal census statistics for quicksilver first appeared at the census of 1860, when 3 establishments were reported, with products valued at \$382,000. At the census of 1870 statistics appear for 4 producers, with products valued at \$1,027,680. At the Eleventh Census the number of mines reported was 11, with products valued at \$1,190,500. The entire quantity of cinnabar and quicksilver for these various years was produced in California. The statistics for the year 1902 are summarized in the following table:

TABLE 75.—Summary: 1902.

Number of mines.....	41
Number of operators.....	37
Salaried officials, clerks, etc.:.....	
Number.....	117
Salaries.....	\$154,154
Wage-earners.....	
Average number.....	1,329
Wages.....	\$881,340
Contract work.....	\$23,164
Miscellaneous expenses.....	\$59,767
Cost of supplies and materials.....	\$322,267
Product: <sup>1</sup> .....	
Total value.....	\$1,550,090
Quicksilver—	
Quantity, flasks.....	84,291
Value.....	\$1,467,843
Cinnabar—	
Quantity, short tons.....	11,727
Value.....	\$82,242

<sup>1</sup> The United States Geological Survey reports \$1,467,843, which does not include 11,727 short tons of cinnabar, valued at \$82,242, mined but not reduced.

While at the previous censuses all the mines and establishments reporting were located in California, at this census 5 of the 41 mines shown were in Texas. There were 56 mines in California, Oregon, and Texas, reported idle during 1902, and 10—7 in California and 3 in Oregon—at which development work was reported.

By far the greater part of the product shown is that of the manufacture of quicksilver from the ore, only 11,727 short tons of crude ore (cinnabar) being reported unconcentrated, the value thereof being \$82,242.

The yearly production of quicksilver in California and the world's production, as reported by the United States Geological Survey, are shown in Tables 76 and 77.

TABLE 76.—Production of quicksilver in California and the average price per flask at San Francisco: 1889 to 1902.

YEAR.	Quantity (flasks containing 76.5 pounds).	Average price per flask.
1889.....	26,464	\$45.00
1890.....	22,926	52.50
1891.....	22,904	45.25
1892.....	27,998	40.71
1893 <sup>1</sup> .....	30,164	36.75
1894.....	30,416	30.70
1895.....	36,067	37.04
1896.....	30,765	34.96
1897.....	26,691	37.28
1898.....	31,022	38.23
1899.....	29,454	47.70
1900.....	26,817	44.94
1901.....	26,720	48.46
1902.....	28,972	43.20

<sup>1</sup> Beginning with 1898, figures taken from annual statistical bulletin of the California State Mining Bureau.

TABLE 77.—World's production of quicksilver, by countries: 1899, 1900, and 1901.<sup>1</sup>

[Quantity in metric tons.]

COUNTRY.	1899		1900		1901	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Total.....	3,521	\$3,998,809	3,152	\$3,577,444	2,588	\$3,397,108
United States.....	1,057	1,452,745	983	1,302,586	1,081	1,382,305
Austria.....	536	492,021	510	499,052	525	547,513
Italy.....	205	246,000	260	312,000	278	361,400
Russia.....	362	321,814	304	270,256	(?)	(?)
Spain.....	1,361	1,481,229	1,065	1,198,550	754	1,105,890

<sup>1</sup> Mexico exported 324 tons of quicksilver in 1899, 335 tons in 1900, and 335 tons in 1901.

<sup>2</sup> Statistics not yet available.

## STEEL-HARDENING METALS.

Under the head of steel-hardening metals are included metals used or experimented with in the hardening of steel, although some of them are used more generally for other purposes. The metals included in this class are nickel, chromium, tungsten, molybdenum, titanium, uranium, and vanadium. The statistics in this report relate to the production of the ore from which these metals are obtained, except that the figures for nickel and cobalt are for the matte at the mines. The mineral classifications, differing from the metallic here given, are chrome ore (chromium), nickel and cobalt (nickel), and rutile (titanium). There is still another metal that naturally comes under this head, namely, manganese; but on account of its comparatively large production, it is treated separately.

Nickel and chromium have been discussed separately at former censuses, but the statistics of the remaining metals have not been previously shown. At the census of 1860, 4 establishments were reported, 2 of them producing nickel ore, and 2 producing nickel and cobalt. The value of the ore was reported as \$35,626, and of the nickel and cobalt, as \$81,000. One of the establishments was in Connecticut, 1 in New Jersey, and 2 were in Pennsylvania. At the census of 1870, 1 establishment was reported in Pennsylvania producing nickel ore to the value of \$24,000. At the census of 1880, 6 mines were reported producing nickel, nickel and cobalt, and cobalt. One of them was located in Massachusetts, 3 were in Missouri, and 2 in Pennsylvania. The combined value of the products was \$171,739. At the Eleventh Census the number of establishments was not given, but the total value of products at the mine was stated to be \$40,000. The establishments were located in Missouri, Nevada, and Pennsylvania.

Chrome mining appeared first at the census of 1850. The mines reported were 4 in number, all located in Pennsylvania, and the value of the product was stated to be \$24,400. At the census of 1860, 1 mine was reported located in Maryland, having a product valued at \$15,000. Five mines were reported at the census of 1880; 2 were located in California, 2 in Maryland, and 1 in Pennsylvania. The value of the product was reported as \$27,808. At the census of 1890, 6 mines were reported, having a value of products of \$30,000. They were all situated in California.

The statistics for the steel-hardening metals during 1902 are summarized in the following table:

TABLE 78.—Summary: 1902.

Number of mines.....	12
Number of operators.....	12
Salaries officials, clerks, etc.:	
Number.....	8
Salaries.....	\$3,740
Wage-earners:	
Average number.....	26
Wages.....	\$20,911
Contract work.....	\$425
Miscellaneous expenses.....	\$735
Cost of supplies and materials.....	\$3,652
Product: <sup>1</sup>	
Quantity, short tons.....	4,444
Value.....	\$83,717

<sup>1</sup>The United States Geological Survey does not report the value of tungsten and molybdenum, nor does it under this classification present the other metals. The report for nickel is for the refined; for cobalt, the oxide prepared from the ore, while census figures are for the nickel and cobalt matte at the mine.

Of the 12 mines, 4 produced tungsten ores; 3 uranium and vanadium ores; 1 each chrome ore, molybdenum ore, and rutile; and 2 nickel and cobalt ores.

Nickel and cobalt ores were concentrated into a matte. Tungsten ores were concentrated more or less. The value of the other ores is the value as mined.

One chrome ore mine in California, 4 tungsten mines in Arizona, Colorado, Nevada, and Wisconsin, and 2 uranium and vanadium mines in Colorado, were reported idle during 1902.

Tables 79 and 80 show the production of nickel and the production of chrome ore, in the United States, and the production of nickel in the principal producing countries of the world, as reported by the United States Geological Survey.

TABLE 79.—Production of nickel from domestic ores and of chrome ore in the United States: 1889 to 1902.

YEAR.	NICKEL.		CHROME ORE.	
	Quantity (pounds).	Value.	Quantity (short tons).	Value.
1889.....	1,252,663	\$151,598	2,000	\$30,000
1890.....	223,488	184,093	3,599	53,985
1891.....	118,498	71,099	1,372	20,580
1892.....	92,252	50,789	1,500	25,000
1893.....	49,399	22,197	1,450	21,750
1894.....	9,615	3,269	3,680	53,231
1895.....	10,302	3,091	1,740	16,795
1896.....	17,170	4,464	786	6,667
1897.....	23,707	7,823		
1898.....	11,145	3,956		
1899.....	22,541	8,566		
1900.....	9,715	3,866	140	1,400
1901.....	6,700	3,551	368	5,790
1902.....	5,748	2,701	315	4,667

<sup>1</sup>Includes 35,000 pounds of nickel from Canadian matte.

TABLE 80.—Production of nickel in Canada, France, and Germany: 1889 to 1902.

YEAR.	CANADA. <sup>1</sup>		FRANCE.		GERMANY.	
	Quantity (pounds).	Value.	Quantity (metric tons).	Value.	Quantity (metric tons).	Value.
1889.....	830,477	\$498,286	330	\$324,900	282	\$279,680
1890.....	1,435,742	2,933,282	330	317,300	434	436,430
1891.....	4,626,627	2,775,976	380	319,200	594	644,480
1892.....	2,413,717	1,399,956	1,244	1,174,580	747	698,630
1893.....	3,992,982	2,076,351	2,045	1,175,720	893	774,630
1894.....	4,907,430	2,061,120	1,545	1,175,720	622	449,350
1895.....	3,868,525	1,360,984	1,545	1,033,220	698	575,890
1896.....	3,397,113	1,188,990	1,545	875,330	822	666,900
1897.....	3,997,746	1,399,137	1,245	704,425	898	710,980
1898.....	5,517,690	1,820,358	1,540	887,800	1,108	670,482
1899.....	5,744,000	2,067,340	1,740	1,003,600	1,115	669,517
1900.....	7,040,000	3,327,707	1,700	1,020,000	1,376	946,884
1901.....	8,882,000	4,707,460	1,800	1,440,000	1,659	1,184,263
1902.....	10,693,410	5,025,903				

<sup>1</sup>Most of the Canadian matte is refined in the United States.

## STONE.

The statistics for stone include those for limestones and dolomites, marble, sandstones and quartzites, silica sand, siliceous crystalline rocks, and slate. Under the classification of siliceous crystalline rocks are included the following: Granite, gneiss, mica schist, lava, andesite, syenite, quartz porphyry, trap, basalt, diabase, diorite, and gabbro. Under sandstones and quartzites are included sandstone, calcareous sandstone, blue-stone (New York and Pennsylvania), jasper (southern

Minnesota), and volcanic tuff (Douglas county, Colorado). Under limestones and dolomites are included the limestone used for iron flux and in the manufacture of lime.

Statistics for stone are found in the various censuses beginning as early as 1850, but for most of the decades

they are not comparable with those for 1902. At the Eleventh Census the number of quarries reported was 4,163 and the value of the product \$53,035,620. The statistics for 1902 are summarized in the following table:

TABLE 81.—SUMMARY: 1902.

	Total.	Limestones and dolomites.	Marble.	Sandstones and quartzites.	Silica sand.	Siliceous crystalline rocks.	Slate.
Number of quarries .....	5,764	3,246	83	1,304	26	906	199
Number of operators .....	5,470	3,137	75	1,211	20	858	174
Salaried officials, clerks, etc.:							
Number .....	5,279	2,231	852	847	85	1,377	437
Salaries .....	\$4,488,339	\$1,843,747	\$341,021	\$718,579	\$27,228	\$1,227,885	\$334,879
Wage-earners:							
Average number .....	71,156	31,547	4,070	10,448	335	18,836	5,920
Wages .....	\$37,515,907	\$14,750,638	\$2,212,640	\$6,153,060	\$149,114	\$11,072,996	\$3,177,459
Contract work .....	\$36,981	\$36,381		\$500	\$100		
Miscellaneous expenses .....	\$3,976,865	\$1,440,061	\$382,877	\$878,780	\$18,776	\$810,206	\$446,145
Cost of supplies and materials .....	\$10,739,736	\$5,403,912	\$325,822	\$1,296,190	\$38,386	\$2,438,065	\$680,361
Value of product .....	\$70,462,438	\$30,441,801	\$5,044,182	\$10,601,171	\$421,289	\$18,257,944	\$5,696,051

<sup>1</sup> Production reported by United States Geological Survey does not include limestone consumed in the manufacture of cement valued at \$210,798.

<sup>2</sup> The United States Geological Survey reports under "Glass sand," 943,135 short tons valued at \$807,797, which includes glass sand obtained from banks. Census figures include only the sand produced at sandstone quarries by crushing the rock.

There are certain by-products interchanged between these classifications, the quantity and value of which are shown in the statement on page 11.

A comparatively small part of the product of stone

quarries was sold in the rough; most of it was subjected to some manufacturing process before being marketed. The extent of this manufacture, and the kind and value thereof, are shown in the following table:

TABLE 82.—KIND OF STONE, FOR WHAT PURPOSE USED, AND VALUE: 1902.

	Total.	Limestones and dolomites.	Marble.	Sandstones and quartzites.	Silica sand.	Siliceous crystalline rocks.	Slate.
Total value .....	\$70,462,438	\$30,441,801	\$5,044,182	\$10,601,171	\$421,289	\$18,257,944	\$5,696,051
Sold rough:							
Building .....	5,294,318			3,119,236		2,175,082	
Monumental .....	1,714,156					1,714,156	
Other purposes .....	2,820,543		12,276,629			543,914	
Dressed:							
Building .....	14,849,184	5,563,084	1,038,102	2,888,248		4,859,750	
Interior decoration .....	679,913		679,913				
Monumental .....	3,241,625		956,870			2,284,755	
Ornamental .....	7,300		7,300				
Other purposes .....	85,368		85,368				
Crushed:							
Concrete .....	2,661,692	1,600,664		326,467		734,561	
Railroad ballast, etc. ....	3,583,730	2,661,081		347,869		574,780	
Roadmaking, macadam, etc.	5,235,537	2,890,985		442,113		1,902,439	
Blast furnace flux .....	5,271,252	5,271,252					
Curbing .....	1,828,468	331,968		672,654		823,846	
Flagging .....	1,437,267	241,688		1,142,699		52,880	
Ganister rock .....	112,600			112,600			
Lime burned .....	9,335,618	9,335,618					
Paving .....	2,051,393			527,617		1,523,776	
Riprap .....	1,096,584	508,157		269,269		319,158	
Rubble .....	2,242,524	1,096,729		645,619		500,176	
Sand:							
Building .....	24,000				24,000		
Engine .....	3,000				3,000		
Furnace .....	78,244				78,244		
Glass .....	130,263				130,263		
Other purposes .....	185,782				185,782		
Slate:							
Roofing .....	4,950,428						4,950,428
Other purposes .....	745,623						745,623
Sold to cement manufacturers .....	210,798	210,798					
Sold to lime burners .....	237,393	237,393					
Other purposes .....	847,835	492,384		106,780		248,671	

<sup>1</sup> Sold rough for all purposes.

Reports were received showing that 2,190 stone quarries in 36 states and territories were idle during 1902, and that at 23 quarries in 11 states development work was done.

The annual value of stone produced from 1891 to 1902, inclusive, as reported by the United States Geological Survey, is shown in Table 83. The Jasper of Minnesota and South Dakota, the quartzites of

Minnesota and the volcanic tuff of Douglas county, Colorado, classified in 1902 as sandstone, was previously included in granite.

TABLE 83.—Value of stone produced: 1891 to 1902.

YEAR.	Total value.	Granite.	Marble.	Slate.	Sandstone.	Limestone.
1891.....	\$47,294,746	\$13,867,000	\$3,610,000	\$3,825,746	\$10,200,000	\$15,792,000
1892.....	48,721,625	12,642,000	3,705,000	4,117,125	9,915,500	18,342,000
1893.....	33,985,573	8,808,984	2,411,092	2,523,173	6,295,151	13,947,223
1894.....	37,065,030	10,029,156	3,199,585	2,790,324	4,855,847	16,190,118
1895.....	34,688,816	8,894,328	2,825,719	2,698,700	4,961,314	15,308,755
1896.....	31,346,171	7,944,994	2,859,136	2,746,205	4,773,199	13,022,637
1897.....	36,070,651	8,905,075	3,870,584	3,524,614	4,965,445	14,804,933
1898.....	38,441,354	9,324,406	3,629,940	3,723,540	5,724,412	16,039,056
1899.....	44,090,670	11,618,339	4,011,681	3,962,733	5,739,954	18,757,963
1900.....	48,008,739	12,675,617	4,267,253	4,240,466	6,471,384	20,354,019
1901.....	60,275,762	15,976,961	4,965,699	4,787,525	8,138,680	26,406,897
1902.....	69,830,351	18,257,944	5,044,182	5,696,051	10,601,171	30,231,003

<sup>1</sup> Does not include grindstones and whetstones.

<sup>2</sup> Includes the value of limestone used for blast furnace flux.

#### SULPHUR AND PYRITE.

Sulphur is an elementary substance found native and also widely distributed as sulphates and sulphides of many of the other elements. In the crude state sulphur is used for vulcanizing rubber, and in the manufacture of gunpowder and matches; in its refined state it is used in medicine. A small quantity of crude sulphur is used in the manufacture of sulphuric acid, but most of this acid is made from the mineral pyrite.

The statistics for the sulphur and the pyrite industries have been united in order not to disclose the operations of one of the companies engaged in producing sulphur. Sulphur first appeared in census statistics at the census of 1860, when 3 establishments were reported with products valued at \$133,264; 2 of these were in New York and 1 was in New Jersey. At the census of 1880 the production of sulphur was reported in the statistics of manufactures under the chemical industry. The value of products shown was \$21,000 and the establishments reporting were all situated in Nevada. At the Eleventh Census 2 mines were reported, 1 each in Nevada and Utah, the total output being 1,150 short tons of ore, producing 450 short tons of sulphur, valued at \$7,850.

Statistics for pyrite first appeared at the census of 1880. One mine was reported in New York producing 2,240 short tons, valued at \$5,000. At the Eleventh Census the number of mines was not given, but the value of products was stated to be \$202,119 and the quantity mined as 104,950 short tons. The mines were located in Massachusetts and Virginia.

The statistics for the sulphur and pyrite industry for 1902 are summarized in the following table:

TABLE 84.—Summary: 1902.

Number of mines or quarries.....	28
Number of operators.....	18
Salaried officials, clerks, etc.:	
Number.....	54
Salaries.....	\$49,890
Wage-earners:	
Average number.....	970
Wages.....	\$398,870
Contract work.....	\$3,587
Miscellaneous expenses.....	\$39,118
Cost of supplies and materials.....	\$217,262
Product:	
Quantity, long tons <sup>1</sup> .....	207,874
Value.....	\$947,089

<sup>1</sup> Includes 11,483 tons of pyrite valued at \$29,420, and produced as a by-product of coal mining.

Part of the product shown is refined and ground. The pyrite is used principally in the manufacture of sulphuric acid and the quantity given is as mined.

There were 8 mines in Alabama, Colorado, Ohio, Utah, and Virginia reported idle during 1902, and 1 in Texas at which development work was reported.

The quantity and value of the yearly production of sulphur, and pyrite mined in the United States for its sulphur contents, and of the world's production of sulphur and pyrite, as reported by the United States Geological Survey, are shown in Tables 85, 86, and 87.

TABLE 85.—Production of sulphur and pyrite: 1889 to 1902.

YEAR.	SULPHUR.		PYRITE.	
	Quantity (short tons).	Value.	Quantity (long tons).	Value.
1889.....	450	\$7,850	93,705	\$202,119
1890.....			99,854	273,745
1891.....	1,200	39,600	106,536	338,880
1892.....	2,688	80,640	109,788	305,191
1893.....	1,200	42,000	75,777	256,552
1894.....	500	20,000	105,940	363,134
1895.....	1,800	42,000	99,549	322,845
1896.....	5,260	87,200	115,488	320,163
1897.....	2,275	45,590	143,201	391,541
1898.....	1,200	32,960	193,364	593,801
1899.....	4,830	107,500	174,734	543,249
1900.....	3,525	88,100	204,615	749,991
1901.....	7,690	223,430	234,825	1,024,449
1902.....			207,874	947,089

<sup>1</sup> Includes sulphur.

TABLE 86.—World's production of sulphur, by countries: 1899, 1900, and 1901.

COUNTRY.	1899		1900		1901	
	Quantity (metric tons).	Value.	Quantity (metric tons).	Value.	Quantity (metric tons).	Value.
Total.....	645,044	\$10,946,838	641,809	\$10,809,041	636,761	\$11,149,937
United States.....	4,383	107,500	3,199	88,100	6,976	223,430
Austria.....	555	1,526	862	2,256	4,911	12,107
France <sup>1</sup> .....	11,744	28,884	11,551	26,427	7,000	16,400
Germany.....	1,663	36,000	1,445	31,000	963	20,250
Greece.....	1,287	22,266	891	16,088	3,212	67,290
Hungary.....	116	3,600	123	3,820	137	3,847
Italy.....	554,638	10,392,415	544,119	10,212,903	563,096	10,734,192
Japan.....	10,235	211,735	14,435	298,660	( <sup>2</sup> )	
Russia.....	451	9,412	( <sup>2</sup> )		( <sup>2</sup> )	
Spain.....	1,100	31,350	750	18,000	610	13,115
Sweden.....	158,922	1102,150	64,364	1109,947	149,856	159,306
			70	1,890	Nil.	

<sup>1</sup> Crude rock.

<sup>2</sup> Statistics not yet reported.

TABLE 87.—WORLD'S PRODUCTION OF IRON PYRITE AND QUANTITY OF SULPHUR DISPLACED, BY COUNTRIES: 1892 TO 1901.

[Quantity in long tons.]

COUNTRY.	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901
Spain <sup>1</sup> .....	435,906	393,453	511,769	480,255	98,398	217,545	255,896	314,212	350,296	893,397
France.....	226,304	227,288	278,452	248,934	295,325	298,571	306,022	318,087	300,170	302,606
Portugal.....		2,046		192,174	204,106	206,886	244,222	271,228	389,892	331,641
United States.....	109,788	75,777	105,940	99,549	115,483	143,201	193,354	174,784	204,615	234,825
Germany.....	113,891	119,379	132,621	124,994	127,092	131,160	134,550	142,299	166,724	154,964
Norway.....	57,629	52,890	69,720	48,217	59,534	92,966	88,320	94,099	97,357	(3)
Hungary.....	27,575	67,093	75,635	68,083	51,851	43,740	57,148	78,241	85,602	92,428
Italy.....	27,225	28,987	22,274	37,966	44,998	57,833	65,120	75,308	70,465	87,969
Canada.....	53,372	52,270	36,185	30,534	30,108	34,471	28,766	24,721	38,742	31,433
Newfoundland.....		37,889	40,770	34,318	27,267	32,790	32,335	28,154	Nil.	7,582
Russia.....	13,893	20,958	19,187	12,988	12,791	19,069	24,175	22,877	22,789	(3)
United Kingdom.....	18,967	15,837	15,523	9,048	10,017	10,583	12,102	12,230	12,279	10,241
Bosnia.....				197	1,968	3,611	238	423	1,673	4,498
Belgium.....	2,529	6,200	3,001	3,454	2,519	1,798	145	278	394	.....
Sweden.....	1,229	472	645	217	998	509	380	148	176	Nil.
Total.....	1,082,808	1,100,539	1,311,722	1,390,928	1,082,434	1,294,283	1,443,866	1,552,039	1,688,204	1,651,573
Sulphur displaced <sup>2</sup> .....	487,263	496,242	590,275	625,918	487,096	562,427	649,739	696,418	759,692	743,208

<sup>1</sup> Exports, except in 1896.

<sup>2</sup> Statistics not available.

<sup>3</sup> Based on estimated 45 per cent of sulphur contents.

#### TALC AND SOAPSTONE.

Included in the statistics for talc and soapstone is a small production of serpentine, and all of the pyrophyllite, mined and used for the same purposes as talc. The name talc has been used commonly and yet erroneously for a number of minerals similar to it in physical properties but mineralogically distinct. The fibrous and foliated varieties, which are the purer forms, are commercially known as talc, while the other material, called soapstone, is a somewhat variable, massive rock in which talc is the principal constituent.

The foliated talc is the most valuable, being pure and very free from grit, so it can be used in the manufacture of talcum powders, etc. Occasionally this variety is so compact that tailors' pencils are made from it, in which case it brings the highest price of all. Certain varieties of the massive talc are also pure enough to be used for flour talc, but the greater portion of it is used in the manufacture of soapstone articles. Most of the fibrous talc is obtained from New York, and is used almost exclusively in the manufacture of paper.

In treating the statistics for the talc and soapstone mining industry it is necessary to include also the statistics of the manufacturing processes which are conducted at the mines under the same management, as the financial and other details are inseparable. This method has been customary since the census of 1860, which was the first at which statistics for this industry were given.

At the census of 1860, 6 establishments were shown with a total value of products of \$27,600; 4 of these were in Massachusetts and 2 in Pennsylvania. In 1870 the number of establishments had increased to 9, and the products were valued at \$189,115. Five of these were in Massachusetts, 1 in Pennsylvania, 1 in Maryland, and 2 in Vermont. In 1880, 14 mines were reported, producing 12,651 tons, valued at \$121,395. Of these mines 3 each were located in New York and Vermont, 2 each in Georgia, North Carolina, and Penn-

sylvania, and 1 each in Maryland and New Hampshire. At the Eleventh Census neither the number of mines nor establishments was given. The value of products was reported as \$475,878, and the quantity as 36,461 tons. The production of talc and soapstone in 1902 was from California, Georgia, Maryland, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, and Virginia, and the statistics for the industry for this year are summarized in the following table:

TABLE 88.—Summary: 1902.

Number of mines or quarries.....	20
Number of operators.....	20
Salaried officials, clerks, etc.:	
Number.....	75
Salaries.....	\$63,713
Wage-earners:	
Average number.....	771
Wages.....	\$279,083
Miscellaneous expenses.....	\$50,136
Cost of supplies and materials.....	\$125,982
Product: <sup>1</sup>	
Quantity, short tons.....	36,461
Value.....	\$1,138,167

<sup>1</sup> The United States Geological Survey reports 97,964 short tons valued at \$1,140,507, which includes 391 short tons of soapstone, valued at \$2,340, used as a mineral pigment and so reported by the census.

There were 13 mines—in California, Georgia, Maryland, Massachusetts, New Hampshire, North Carolina, Ohio, and Virginia—reported idle during 1902.

The yearly production of talc and soapstone, as reported by the United States Geological Survey, is shown in the following table:

TABLE 89.—Production of talc and soapstone: 1889 to 1902.

YEAR.	Quantity (short tons).	Value.
1889.....	36,461	\$475,878
1890.....	55,024	641,505
1891.....	69,568	737,049
1892.....	65,833	909,984
1893.....	56,382	668,508
1894.....	63,050	836,385
1895.....	60,735	637,392
1896.....	68,272	753,508
1897.....	78,932	762,565
1898.....	76,587	698,542
1899.....	79,420	768,965
1900.....	91,443	883,041
1901.....	97,843	908,488
1902.....	97,964	1,140,507

TABLE 90.—DETAILED SUMMARY,

MINERALS, BY GROUPS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.									
			Total.		General officers.		Superintendents, managers, foremen, surveyors, etc.		Foremen, below ground.		Clerks.	
			Number.	Salaries.	Number.	Salaries.	Number.	Salaries.	Number.	Salaries.	Number.	Salaries.
1 All minerals .....	151,516	46,858	38,128	\$39,020,552	4,591	\$8,218,541	15,538	\$16,666,416	6,863	\$6,206,307	11,136	\$7,927,288
2 Metallic.....	4,280	4,081	8,138	9,948,385	774	1,645,670	3,399	4,635,451	2,360	2,409,840	1,605	1,257,874
3 Copper ore .....	144	144	1,208	1,768,456	116	311,479	400	655,475	337	459,611	355	341,891
4 Gold and silver .....	2,992	2,992	3,480	5,076,773	437	810,555	1,725	2,724,092	850	1,090,963	468	451,163
5 Iron ore.....	525	332	2,405	2,113,230	129	298,076	846	797,807	782	627,178	648	390,169
6 Lead and zinc ore.....	559	557	910	826,327	76	195,910	363	365,089	366	209,308	105	55,520
7 Manganese ore.....	19	19	18	9,395	.....	.....	11	7,354	5	1,560	2	481
8 Quicksilver.....	41	37	117	154,154	16	29,650	54	85,634	20	20,220	27	18,650
9 Fuels.....	140,463	36,017	22,383	22,216,322	2,700	4,795,216	7,666	8,257,880	4,402	3,733,614	7,615	5,429,612
10 Coal, anthracite.....	334	119	3,014	2,907,293	134	363,584	648	1,085,280	998	812,891	1,084	695,588
11 Coal, bituminous.....	5,652	4,409	14,413	14,511,924	1,741	3,220,054	4,213	4,790,038	3,404	2,920,723	5,055	3,581,109
12 Natural gas.....	15,806	1,967	1,923	1,810,837	366	560,575	791	723,085	.....	.....	746	526,677
13 Petroleum.....	118,671	29,522	3,033	2,986,768	439	651,008	1,814	1,709,477	.....	.....	780	626,288
14 Structural materials.....	6,044	5,746	6,342	5,699,130	888	1,455,282	3,777	3,151,906	85	23,771	1,642	1,068,171
15 Cement.....	101	93	913	1,087,514	148	347,132	406	476,661	20	15,010	339	248,711
16 Clay.....	205	203	185	150,505	50	60,295	94	67,492	15	8,761	26	13,957
17 Limestones and dolomites.....	3,246	3,137	2,281	1,843,747	336	509,139	1,359	1,011,374	.....	.....	586	323,234
18 Marble.....	33	75	352	341,021	51	99,260	197	180,758	.....	.....	104	60,978
19 Sandstones and quartzites.....	1,304	1,211	847	713,579	101	154,521	531	408,486	.....	.....	215	150,572
20 Siliceous crystalline rocks.....	906	853	1,377	1,227,885	136	220,180	923	799,195	.....	.....	318	208,510
21 Slate.....	199	174	437	334,879	66	64,755	267	207,915	.....	.....	104	62,209
22 Abrasive materials.....	82	75	75	48,008	16	13,101	43	25,506	1	600	15	8,801
23 Buhstones and millstones.....	29	29	7	4,682	1	471	6	4,211	.....	.....	.....	.....
24 Corundum and emery.....	5	5	9	5,960	4	2,850	2	1,199	1	600	2	1,211
25 Crystalline quartz.....	6	6	8	6,080	2	2,000	4	2,830	.....	.....	2	1,200
26 Garnet.....	7	7	12	9,178	2	2,150	6	4,023	.....	.....	4	3,000
27 Grindstones and pulpstones.....	9	9	25	18,042	2	480	18	10,132	.....	.....	5	2,430
28 Infusorial earth, tripoli, and pumice.....	11	10	8	4,016	1	1,000	5	2,056	.....	.....	2	960
29 Oilstones, whetstones, and scythe-stones.....	15	10	6	5,100	4	4,050	2	1,050	.....	.....	.....	.....
30 Chemical materials.....	228	174	750	750,963	115	184,804	421	418,695	34	20,942	180	126,512
31 Borax.....	6	6	14	18,128	1	1,800	7	10,598	3	3,480	3	2,250
32 Fluorspar.....	22	18	42	27,311	12	11,545	17	12,487	11	2,849	2	480
33 Gypsum.....	62	45	249	300,420	32	73,936	113	153,095	12	8,948	92	64,441
34 Phosphate rock.....	115	87	391	355,204	64	88,473	253	213,983	1	275	73	62,473
35 Sulphur and pyrite.....	23	18	54	49,890	6	9,050	31	28,582	7	5,390	10	6,868
36 Pigments.....	84	77	91	68,752	25	31,308	38	25,205	12	5,251	16	6,988
37 Barytes.....	49	42	28	15,159	8	5,308	7	5,570	9	3,001	4	1,280
38 Mineral pigments, crude.....	35	35	63	53,593	17	26,000	31	19,635	3	2,250	12	5,708
39 Miscellaneous.....	335	688	349	289,052	73	93,160	194	151,773	19	14,789	68	29,330
40 Asbestos.....	4	4	7	2,628	2	900	4	1,665	.....	.....	1	63
41 Asphaltum and bituminous rock.....	24	24	52	48,233	23	27,700	17	15,013	1	1,240	11	4,280
42 Bauxite.....	38	7	42	88,230	5	10,000	32	19,630	.....	.....	6	3,800
43 Feldspar.....	27	26	27	20,096	4	4,275	20	14,800	.....	.....	3	1,020
44 Flint.....	19	17	18	14,380	3	3,875	10	9,105	.....	.....	5	1,350
45 Fuller's earth.....	4	4	14	10,000	2	3,500	9	5,000	.....	.....	3	1,500
46 Graphite.....	28	19	27	18,924	4	2,600	14	10,112	5	4,435	4	1,777
47 Lithium ore.....	3	3	1	600	.....	.....	1	600	.....	.....	.....	.....
48 Marl.....	11	11	2	2,100	.....	.....	1	1,800	.....	.....	1	300
49 Mica.....	49	38	21	13,444	6	4,300	12	7,314	1	450	2	1,380
50 Monazite.....	23	22	3	2,100	.....	.....	3	2,100	.....	.....	.....	.....
51 Precious stones.....	46	460	22	28,687	3	2,500	13	21,247	2	2,760	4	2,180
52 Silica sand.....	26	20	35	27,228	9	10,240	18	13,108	.....	.....	8	3,880
53 Talc and soapstone.....	20	20	75	63,713	12	23,270	38	28,089	9	4,404	16	8,000
54 Tungsten.....	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
55 Uranium and vanadium.....	3	3	2	3,500	.....	.....	1	2,000	1	1,500	.....	.....
56 All other minerals <sup>1</sup> .....	6	6	1	240	.....	.....	1	240	.....	.....	.....	.....

<sup>1</sup> Includes operators as follows: Chrome ore, 1; magnesite, 1; molybdenum, 1; nickel and cobalt, 2; rutile, 1.





TABLE 90.—DETAILED SUMMARY,

MINERALS, BY GROUPS.	WAGE-EARNERS—continued.						AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.				
	Below ground—Continued.						Men 16 years and over.				
	Miners' helpers.		Boys under 16 years.		All other wage-earners.		January.	February.	March.	April.	May.
	Average number.	Wages.	Average number.	Wages.	Average number.	Wages.					
1 All minerals.....	18,736	\$11,496,910	5,638	\$1,548,889	78,548	\$47,158,438	590,362	587,181	595,413	604,359	556,464
2 Metallic.....	7,730	5,476,714	101	29,593	15,446	10,583,760	102,242	101,514	104,087	107,993	112,982
3 Copper ore.....	1,257	777,210	35	18,500	4,363	3,101,722	24,885	24,658	25,602	26,088	27,073
4 Gold and silver.....	3,293	3,004,334	6	2,517	3,226	3,099,079	34,678	34,925	34,810	35,955	37,164
5 Iron ore.....	2,293	1,252,772	49	11,709	6,997	3,954,189	33,854	33,195	34,714	36,829	39,291
6 Lead and zinc ore.....	658	317,050	7	947	763	383,769	7,325	7,266	7,465	7,608	7,965
7 Manganese ore.....	3	884			3	1,251	165	144	172	178	167
8 Quicksilver.....	226	124,464	4	620	94	48,750	1,385	1,326	1,324	1,385	1,322
9 Fuels.....	10,558	5,797,374	5,534	1,518,127	62,897	36,472,891	416,024	412,953	407,798	397,800	337,120
10 Coal, anthracite.....	6,921	3,643,893	742	182,362	16,297	8,391,870	110,018	110,760	109,165	109,190	53,169
11 Coal, bituminous.....	3,637	2,153,481	4,792	1,835,765	46,600	28,080,521	284,823	281,390	277,656	267,909	262,358
12 Natural gas.....							3,819	3,575	3,631	3,866	4,111
13 Petroleum.....							17,364	17,238	17,346	17,435	17,482
14 Structural materials.....	237	107,711	2	969	116	55,497	61,467	61,746	72,024	86,313	93,630
15 Cement.....	220	99,100	2	969	30	14,092	10,330	10,272	10,771	12,290	13,180
16 Clay.....	17	8,611			86	41,405	2,119	2,100	2,281	2,405	2,575
17 Limestones and dolomites.....							22,381	22,206	27,391	32,808	34,807
18 Marble.....							3,546	3,593	3,855	4,064	4,294
19 Sandstones and quartzites.....							5,693	5,766	7,719	10,338	12,673
20 Siliceous crystalline rocks.....							12,289	12,685	14,755	18,674	20,138
21 Slate.....							5,109	5,144	5,302	5,734	5,963
22 Abrasive materials.....	10	5,850					427	437	475	605	669
23 Buhrstones and millstones.....							74	76	87	92	98
24 Corundum and emery.....	10	5,850					36	37	35	33	47
25 Crystalline quartz.....							17	17	17	27	28
26 Garnet.....							62	62	68	137	143
27 Grindstones.....							149	153	165	193	212
28 Infusorial earth, tripoli, and pumice.....							29	29	29	31	38
29 Oilstones, whetstones, and scythe-stones.....							60	63	74	87	103
30 Chemical materials.....	144	79,579	1	200	72	34,778	7,610	7,889	8,111	8,612	8,886
31 Borax.....	27	20,550			5	4,258	170	170	174	174	174
32 Fluorspar.....	9	3,263					161	147	147	183	256
33 Gypsum.....					19	9,605	770	1,271	1,304	1,450	1,521
34 Phosphate rock.....			1	200			5,662	5,336	5,621	5,841	5,944
35 Sulphur and pyrite.....	108	55,786			48	20,915	947	945	965	964	992
36 Pigments.....	20	8,016			9	3,599	483	638	646	655	697
37 Barytes.....	1	288					244	402	414	418	443
38 Mineral pigments, crude.....	19	7,728			9	3,599	239	236	282	237	254
39 Miscellaneous.....	37	21,666			8	3,413	2,109	2,024	2,272	2,381	2,480
40 Asbestos.....							15	10	14	14	9
41 Asphaltum and bituminous rock.....	1	791					140	139	146	140	132
42 Bauxite.....							145	147	147	147	164
43 Feldspar.....							226	225	229	248	249
44 Flint.....							99	95	108	119	131
45 Fuller's earth.....							88	63	60	66	66
46 Graphite.....	6	2,350			3	1,419	137	138	152	149	167
47 Lithium ore.....											
48 Marl.....							10	10	16	10	10
49 Mica.....	3	1,280			2	640	75	76	78	101	98
50 Monazite.....							27	29	108	118	126
51 Precious stones.....	5	5,445			2	1,219	92	90	87	112	109
52 Silica sand.....							270	264	335	343	365
53 Talc and soapstone.....	17	8,500			1	135	766	717	769	783	813
54 Tungsten.....							3	3	3	3	
55 Uranium and vanadium.....							9	11	17	19	21
56 All other minerals <sup>1</sup> .....	5	3,300					7	7	8	9	19

<sup>1</sup> Includes operators as follows: Chrome ore, 1; magnesite, 1; molybdenum, 1; nickel and cobalt, 2; rutile, 1.



TABLE 90.—DETAILED SUMMARY,

	CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.	
	Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.
1 All minerals .....	\$20,677,938	21,188	\$71,771,713	\$84,580,713	\$87,241,000	\$123,814,967		\$796,826,417
2 Metallic.....	1,371,921	2,557	17,168,321	9,591,964	7,576,367	39,689,708		215,458,587
3 Copper ore.....	188,768	195	1,397,465	130,215	1,267,250	11,083,175		51,178,086
4 Gold and silver.....	626,090	990	5,357,529	1,423,399	3,934,130	16,699,768		82,482,052
5 Iron ore.....	425,292	1,079	8,257,714	6,508,908	1,753,806	9,006,608	*35,567,410	65,465,321
6 Lead and zinc ore.....	106,607	223	2,092,001	1,525,368	566,633	2,511,657	*623,662	14,600,177
7 Manganese ore.....			3,845	1,996	1,849	17,228	*16,477	177,911
8 Quicksilver.....	23,164	80	59,767	7,078	52,689	322,267	( <sup>1</sup> )	1,550,090
9 Fuels.....	19,036,167	17,988	47,805,681	23,264,925	24,540,755	61,923,469		469,297,671
10 Coal, anthracite.....	406,421	1,731	9,807,239	4,359,051	4,948,188	12,740,780	*36,940,710	76,178,566
11 Coal, bituminous.....	1,244,114	5,040	16,774,459	7,442,089	9,332,370	24,798,922	260,216,844	290,858,433
12 Natural gas.....	4,459,001	3,268	5,912,257	2,533,995	3,378,362	6,607,255		30,867,863
13 Petroleum.....	12,956,631	7,949	15,811,726	8,929,891	6,881,835	17,781,512	*89,275,302	71,397,739
14 Structural materials.....	60,749	208	5,750,482	1,260,673	4,489,809	20,072,399		96,870,559
15 Cement.....	10,627	84	1,665,520	52,905	1,612,615	9,098,226	*24,655,390	24,288,888
16 Clay.....	13,241	36	126,873	59,387	67,486	272,823	1,456,857	2,061,072
17 Limestones and dolomites.....	36,381	137	1,440,081	422,693	1,017,388	5,408,912		30,441,901
18 Marble.....			382,877	65,385	317,492	825,822		5,044,182
19 Sandstones and quartzites.....	500	1	878,780	196,144	682,636	1,298,190		10,601,171
20 Siliceous crystalline rocks.....			810,206	194,892	615,314	2,488,065		18,267,944
21 Slate.....	446,145		269,267	176,878		690,361	( <sup>1</sup> )	5,696,051
22 Abrasive materials.....			42,410	8,421	33,989	80,309		1,177,711
23 Buhrstones and millstones.....			1,480	636	844	1,809	*6,667	59,806
24 Corundum and emery.....			2,779	1,091	1,688	26,114	4,251	104,606
25 Crystalline quartz.....			1,950	1,825	1,125	960	15,104	43,085
26 Garnet.....			4,952	1,341	3,611	10,128	3,926	132,820
27 Grindstones and pulpstones.....			24,433	2,008	22,430	31,349	55,657	667,431
28 Infusorial earth, tripoli, and pumice.....			2,263	1,050	1,213	2,297	6,415	55,994
29 Oilstones, whetstones, and scythe-stones.....			4,553	475	4,078	7,662	3,876	113,968
30 Chemical materials.....	161,695	331	741,570	296,410	445,160	1,603,343		10,618,669
31 Borax.....			47,606	19,200	28,406	213,588	*19,142	2,333,614
32 Fluorspar.....	300	3	23,602	7,900	15,702	31,374	48,818	275,682
33 Gypsum.....	408	7	200,789	49,912	150,877	341,780	681,633	2,039,341
34 Phosphate rock.....	157,402	306	430,475	212,350	218,125	799,414	*1,548,720	4,922,948
35 Sulphur and pyrite.....	3,587	15	39,118	7,048	32,070	217,262	*207,874	947,069
36 Pigments.....	1,000	10	60,448	40,626	19,822	65,845		564,039
37 Barytes.....	1,000	10	35,555	27,300	8,255	7,772	61,668	203,154
38 Mineral pigments, crude.....			24,898	13,326	11,567	58,073	35,479	360,835
39 Miscellaneous.....	16,406	89	202,801	67,693	135,108	424,894		3,344,181
40 Asbestos.....			1,758		1,758	8,233	2,505	46,200
41 Asphaltum and bituminous rock.....	10,060	60	19,753	2,356	16,897	21,923	66,238	236,728
42 Bauxite.....	500	10	14,939	2,090	12,849	40,019	*29,222	128,206
43 Feldspar.....			19,407	10,584	8,823	50,278	104,287	250,424
44 Flint.....			14,291	5,813	8,478	18,642	11,365	144,209
45 Fuller's earth.....	4,021	8	2,057		2,057	28,966	11,492	96,144
46 Graphite.....	900	2	6,039	520	5,519	51,840	18,273	227,506
47 Lithium ore.....			200		200	1,265	1,245	25,750
48 Marl.....			1,407		1,407	2,755	12,439	12,741
49 Mica.....			12,914	3,142	9,772	11,961	( <sup>12</sup> )	118,849
50 Monazite.....			2,083	1,789	344	256	1,802,000	64,160
51 Precious stones.....			7,481	437	7,044	17,781		328,450
52 Silica sand.....	100	2	18,776	8,373	10,403	38,386	445,903	421,289
53 Talc and soapstone.....			80,136	31,364	48,772	125,932	97,563	1,188,167
54 Tungsten.....			120		120	210	184	5,975
55 Uranium and vanadium.....			490		490	3,010	3,810	48,125
56 All other minerals <sup>13</sup> .....	825	7	950	775	175	3,432	3,586	49,256

<sup>1</sup> Includes electric and other horsepower "supplied by other establishments," but does not include horsepower of electric motors owned.

<sup>2</sup> Long tons.

<sup>3</sup> Includes 132,330 short tons of lead ore and 491,332 short tons of zinc ore.

<sup>4</sup> Quicksilver, flasks, 34,291 (76½ pounds each); cinnabar, 11,727 short tons.

<sup>5</sup> Barrels of 42 gallons.

<sup>6</sup> Barrels.

<sup>7</sup> Roofing slate reported, 1,436,168 squares; quantity for other uses not given.

<sup>8</sup> Number of stones.

BY MINERALS: 1902—Continued.

Total horsepower.	POWER.											To other establishments.	Supplied.			
	Owned.										Horse-power.		By other establishments.			
	Engines.				Water wheels.		Electric motors.		Other power.				Horse-power.	Electric.		Other.
	Steam.		Gas or gasoline.		Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.						
	Number.	Horse-power.	Number.	Horse-power.												
12,867,562	64,179	2,482,963	13,506	259,696	980	60,897	2,998	130,494	1,162	84,546	2,852	23,556	5,905	1		
557,933	4,976	455,202	293	5,913	818	45,614	883	86,742	494	31,077	641	16,812	3,315	2		
198,507	792	189,426	35	1,184	8	326	50	2,312	94	5,235	87	2,336		3		
196,806	1,925	122,354	198	4,060	788	43,936	750	32,003	156	8,003	323	14,469	2,968	4		
119,558	1,182	102,878	11	86	11	1,010	35	987	290	15,444	140		140	5		
41,901	1,060	38,616	32	431	8	320	45	1,475	39	2,385	91	7	192	6		
354	11	354												7		
1,808	56	1,574	17	152	3	22	3	15	5	60				8		
1,999,569	53,729	1,666,227	13,064	248,892	11	1,384	1,411	71,802	568	43,217	2,168	2,517	2,382	9		
434,220	4,629	415,827	6	185			78	5,765	234	18,206	350			10		
521,166	6,516	489,628	152	1,119	11	1,384	1,325	65,972	285	26,675	1,181	2,167	192	11		
104,107	787	94,595	300	7,063			6	50	12	2,162	20	225	42	12		
910,077	41,797	666,177	12,606	240,505			2	26	37	1,172	612	125	2,098	13		
296,448	4,825	273,517	109	4,286	78	8,610	571	20,941	89	4,682	48	4,217	136	14		
114,092	495	108,811	15	2,890	21	1,854	474	17,420	9	2,095	20	3,442		15		
4,478	98	3,942	2	18	1	25			22	498				16		
64,500	1,708	61,547	59	1,081	15	502	35	799	25	1,221	3	102	97	17		
14,286	191	10,748			15	3,413	82	2,220	2	125				18		
25,662	789	24,631	7	72	6	885	6	60	8	53		7	4	19		
46,986	950	44,189	26	275	15	1,506	23	442	19	510	25	471	35	20		
25,454	599	24,649			5	425	1	30	4	185		195		21		
2,495	71	2,300	7	88			1	5	3	96				22		
85									2	85				23		
110	2	30	3	80										24		
20	1	20												25		
430	7	420							1	10				26		
1,247	41	1,235											12	27		
410	7	410					1	5						28		
198	13	185	4	8										29		
28,860	404	27,009	24	302	13	1,094	18	674	6	405			50	30		
338	5	205	11	123	1	10	1	1						31		
699	17	530	10	139			1	25						32		
7,319	68	6,386	2	20	11	914	5	68						33		
14,229	282	13,974			1	170	9	600	2	85				34		
6,306	32	5,915	1	20			2	80	4	820			50	35		
1,950	30	1,310	2	40	9	550			1	50				36		
110	3	110												37		
1,840	27	1,200	2	40	9	550			1	50				38		
11,307	144	7,398	7	174	51	3,645	9	330	1	20		10	60	39		
105	2	105												40		
720	11	660	1	60				1	25					41		
624	19	575	2	49				4	64					42		
1,204	15	854			7	350								43		
740	4	155			10	585								44		
460	7	430	2	30										45		
769	18	749			1	10						10		46		
50	1	50												47		
185	8	160	1	25				1	16					48		
30	2	30												49		
150	4	150												50		
2,000	33	1,960							1	30				51		
3,945	12	1,235	1	10	33	2,700	3	226						52		
280	4	220											60	54		
45	4	45												55		
														56		

\* Includes 2,800 short tons of crude.  
 † Includes 21,870 short tons of crude.  
 ‡ Includes 16,070 short tons of ground.  
 § Includes 3,162 short tons of refined.  
 ¶ Cut or sheet mica, 373,266 pounds; scrap or waste, 1,400 short tons.  
 †† Pounds.  
 ††† Includes operators as follows: Chrome ore, 1; magnesite, 1; molybdenum, 1; nickel and cobalt, 2; rutile, 1.

TABLE 91.—DETAILED SUMMARY, STATES

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
1 United States.....	151,516	46,858	88,128	\$39,020,562	581,728	\$369,959,960	569,871	\$367,071,593	11,857	\$2,888,367
2 Alabama.....	260	172	947	979,117	19,132	10,845,148	18,502	10,173,247	630	171,901
3 Clay.....	5	5	.....	.....	33	9,634	33	9,634	.....	.....
4 Coal, bituminous.....	145	91	623	709,449	12,930	7,841,457	12,462	7,693,918	468	147,539
5 Gold and silver.....	4	4	7	6,710	84	12,182	84	12,182	.....	.....
6 Iron ore.....	59	31	227	188,441	4,864	2,029,807	4,788	2,009,431	126	20,376
7 Limestones and dolomites.....	88	29	68	54,597	1,002	354,718	979	351,002	23	3,716
8 Sandstones and quartzites.....	7	7	6	2,650	58	30,523	58	30,523	.....	.....
9 All other minerals <sup>1</sup> .....	7	5	21	17,270	211	66,827	198	66,567	13	270
10 Arizona.....	113	158	445	710,183	5,823	5,059,065	5,273	5,082,045	50	27,020
11 Copper ore.....	80	30	258	399,275	3,797	3,497,528	3,747	3,470,506	50	27,020
12 Gold and silver.....	74	74	169	283,083	1,442	1,498,251	1,442	1,498,251	.....	.....
13 Sandstones and quartzites.....	4	4	9	16,775	32	24,922	32	24,922	.....	.....
14 All other minerals <sup>2</sup> .....	5	50	9	11,100	52	38,364	52	38,364	.....	.....
15 Arkansas.....	120	181	210	191,523	2,944	1,945,479	2,892	1,933,990	52	11,489
16 Bauxite.....	19	3	13	10,875	80	14,504	28	14,154	2	350
17 Coal, bituminous.....	58	83	146	148,113	2,574	1,780,061	2,527	1,769,897	47	10,664
18 Limestones and dolomites.....	13	12	16	7,864	119	43,680	118	43,580	1	150
19 Oilstones, whetstones, and scythestones.....	4	3	2	1,050	23	10,615	23	10,615	.....	.....
20 Sandstones and quartzites.....	18	17	11	5,806	111	52,170	111	52,170	.....	.....
21 Siliceous crystalline rocks.....	3	3	2	1,650	10	4,260	10	4,260	.....	.....
22 All other minerals <sup>3</sup> .....	10	60	20	16,170	77	40,189	75	39,864	2	325
23 California.....	4,087	1,552	1,432	1,887,860	12,964	11,050,666	12,945	11,044,302	19	6,364
24 Asphaltum and bituminous rock.....	9	9	3	8,280	32	20,081	32	20,081	.....	.....
25 Borax.....	4	4	10	14,778	141	108,525	141	108,525	.....	.....
26 Clay.....	6	6	4	9,558	17	11,680	17	11,680	.....	.....
27 Coal, bituminous <sup>4</sup> .....	10	10	27	35,088	182	126,553	180	126,073	2	480
28 Copper ore.....	7	7	38	48,033	496	445,247	496	445,247	.....	.....
29 Gold and silver.....	1,020	1,020	748	1,049,846	7,989	7,101,006	7,982	7,098,869	7	2,134
30 Limestones and dolomites.....	17	14	7	9,400	281	163,130	281	163,130	.....	.....
31 Manganese ore.....	3	3	.....	.....	.....	4,740	.....	4,740	.....	.....
32 Marble.....	5	5	13	9,297	50	39,951	48	39,080	2	921
33 Natural gas.....	29	15	10	14,940	21	10,800	21	10,800	.....	.....
34 Petroleum.....	2,757	290	384	452,320	1,112	1,087,839	1,112	1,087,839	.....	.....
35 Precious stones.....	31	47	7	9,087	19	12,591	19	12,591	.....	.....
36 Quicksilver.....	36	34	98	131,278	1,096	798,926	1,094	793,141	2	785
37 Sandstones and quartzites <sup>5</sup> .....	15	11	8	11,840	863	269,433	868	269,433	.....	.....
38 Siliceous crystalline rocks.....	64	62	38	45,054	920	687,659	917	686,694	3	964
39 All other minerals <sup>6</sup> .....	24	15	37	42,061	238	167,559	235	166,479	3	1,080
40 Colorado.....	1,147	1,011	1,898	2,663,333	20,519	18,874,836	20,422	18,840,603	97	34,233
41 Clay.....	4	4	3	2,460	50	32,642	50	32,642	.....	.....
42 Coal, bituminous.....	126	80	611	818,445	7,955	6,006,183	7,961	5,973,270	94	32,913
43 Copper ore.....	18	15	25	17,388	115	108,981	115	108,981	.....	.....
44 Gold and silver.....	772	772	1,148	1,687,518	11,200	11,726,123	11,199	11,725,543	1	580
45 Iron ore.....	33	20	33	9,577	418	417,162	418	417,162	.....	.....
46 Lead and zinc ore.....	3	3	3	2,025	5	5,475	5	5,475	.....	.....
47 Limestones and dolomites.....	11	9	6	6,566	188	127,747	186	127,007	2	740
48 Petroleum.....	111	12	23	45,055	147	138,436	147	138,436	.....	.....
49 Sandstones and quartzites.....	51	47	33	28,704	343	237,905	343	237,905	.....	.....
50 Siliceous crystalline rocks.....	10	10	7	6,345	46	34,082	46	34,082	.....	.....
51 Uranium and vanadium.....	3	3	2	3,500	19	17,040	19	17,040	.....	.....
52 All other minerals <sup>7</sup> .....	5	33	4	4,800	33	23,060	33	23,060	.....	.....
58 Connecticut.....	90	78	151	132,095	1,497	808,772	1,490	807,167	7	1,605
54 Crystalline quartz.....	4	3	8	6,080	18	8,792	18	8,792	.....	.....
55 Feldspar.....	6	6	8	5,345	71	33,672	71	33,672	.....	.....
56 Flint.....	4	4	2	1,200	10	4,835	10	4,835	.....	.....
57 Limestones and dolomites.....	12	7	18	13,830	135	66,765	135	66,765	.....	.....
58 Sandstones and quartzites.....	7	7	15	13,564	142	73,939	142	73,939	.....	.....
59 Siliceous crystalline rocks.....	49	44	87	75,682	943	535,334	936	533,729	7	1,605
60 All other minerals <sup>8</sup> .....	8	7	18	11,454	178	85,435	178	85,435	.....	.....
61 Delaware.....	12	12	29	28,047	504	222,622	496	220,122	8	2,500
62 Clay.....	6	6	13	12,740	169	69,472	169	69,472	.....	.....
63 Siliceous crystalline rocks.....	6	6	16	15,907	335	158,150	327	150,650	8	2,500
64 Florida.....	71	46	218	228,868	3,146	1,082,080	3,107	1,075,781	39	6,249
65 Limestones and dolomites.....	6	6	3	2,410	87	28,054	87	28,054	.....	.....
66 Phosphate rock.....	61	36	192	206,108	2,866	996,201	2,850	994,052	16	2,749
67 All other minerals <sup>9</sup> .....	4	4	23	20,350	198	57,175	170	53,675	23	3,500

<sup>1</sup> Long tons.

<sup>2</sup> Includes operators as follows: Bauxite, 1 (3 mines); cement, 1; graphite, 1; marble, 1; sulphur and pyrite, 1.

<sup>3</sup> Includes operators as follows: Fluorspar, 2; lead and zinc ore, 1; precious stones, 46 (1 mine); siliceous crystalline rocks, 1.

<sup>4</sup> Includes operators as follows: Asphaltum and bituminous rock, 1; fuller's earth, 2; gold and silver, 1; manganese ore, 2; marble, 1; mineral pigments, crude, 1; phosphate rock, 1; precious stones, 50 (no mines); slate, 1.

<sup>5</sup> Includes 2 operators in Alaska.

<sup>6</sup> Barrels of 42 gallons.

<sup>7</sup> Quicksilver, 28,972 flasks (76½ pounds each) and 10,427 short tons of cinnabar.

<sup>8</sup> Includes 1 operator in Hawaii.

<sup>9</sup> Includes operators as follows: Cement, 2; chrome ore, 1; gypsum, 1; infusorial earth, tripoli, and pumice, 1; lithium ore, 2; magnesite, 1; mica, 1 (10 mines); mineral pigments, crude, 2; slate, 1; talc and soapstone, 1; sulphur and pyrite, 2.

## AND TERRITORIES, BY MINERALS: 1902.

WAGE-EARNERS—continued.				CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.		
Above ground.		Below ground.		Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.	
Average number.	Wages.	Average number.	Wages.									
221,505	\$125,086,580	360,223	\$244,873,480	\$20,677,938	21,183	\$71,771,718	\$84,580,718	\$87,241,000	\$123,814,967		\$796,825,417	1
6,001	2,477,561	13,131	7,867,567	267,279	1,420	858,851	195,045	663,806	2,043,914		17,367,992	2
83	9,634					8,866	3,785	81	1,993		40,065	3
1,567	804,110	11,363	7,087,847	265,579	1,411	734,972	149,013	585,959	1,219,310		10,354,570	4
12	4,890	22	7,292	1,200	2	524		824	5,216		1,057	5
3,133	1,213,629	1,731	816,178	600	7	88,008	37,938	50,070	592,296		3,936,812	6
1,002	354,718					25,954	2,079	23,875	149,012		759,617	7
58	30,523					1,585	1,480	55	5,230		42,706	8
196	60,077	15	6,750			3,692	750	2,942	70,867		183,392	9
1,720	1,647,840	3,608	3,411,225	159,942	179	392,495	18,567	373,928	3,060,521		11,197,875	10
1,178	1,072,028	2,619	2,425,500	122,337	121	266,753	7,679	249,074	2,135,676		8,279,224	11
459	513,076	983	985,176	37,605	58	114,046	2,888	111,158	873,091		2,764,677	12
52	24,922					9,006		9,006	50,220		107,910	13
51	37,814	1	550			12,691	8,000	4,691	1,584		45,564	14
812	409,741	2,132	1,535,738	860	18	95,481	40,818	54,663	244,379		2,840,341	15
30	14,504			375	8	4,175		4,175	10,602		13,920	16
454	253,503	2,120	1,526,568	485	5	82,949	39,583	43,416	177,716		2,539,214	17
119	43,680					1,716		1,716	32,579		113,163	18
23	10,615					685	175	510	1,625		21,275	19
111	52,170					1,580	350	1,180	7,915		85,917	20
10	4,260					945	760	185	650		12,115	21
65	31,009	12	9,180			3,481		3,481	13,292		54,737	22
6,819	5,326,422	6,645	5,724,244	520,894	604	1,783,790	686,982	1,097,808	5,673,755		28,370,405	23
32	20,031					1,185	800	385	1,350		35,377	24
64	46,471	77	62,064			46,206	19,200	27,006	210,729		2,370,994	25
17	11,680					1,656	1,656		910		24,445	26
61	42,249	121	84,304	2,900	19	8,377	3,000	5,377	45,080		273,398	27
111	106,236	385	340,011			15,367	1,200	14,167	211,163		1,599,663	28
2,675	2,410,549	5,814	4,690,454	47,066	145	967,755	403,990	563,765	2,966,102		15,473,091	29
281	163,130			4,000	10	15,790	8,825	6,965	111,564		521,093	30
2	1,500	5	3,240			50		50	461		10,175	31
50	39,951					6,487	900	5,587	10,317		92,298	32
21	10,780			12,300	2	15,737		15,737	13,698		120,648	33
1,112	1,067,839			431,699	352	571,138	214,261	356,877	1,479,528		4,373,617	34
12	6,937	7	5,654			1,568		1,568	7,113		65,000	35
425	305,099	671	488,827	22,929	76	53,482	7,078	46,384	248,894		1,296,740	36
363	269,433					14,758	6,130	8,628	80,967		469,016	37
920	687,658					39,232	18,089	21,198	115,429		1,137,679	38
173	117,859	65	49,700			25,022	908	24,119	170,600		442,195	39
5,728	5,422,100	14,791	13,452,736	393,985	619	3,032,544	1,064,653	1,967,891	7,006,846		40,603,286	40
14	8,950	86	23,692	7,450	13	7,637	7,314	323	5,608		67,434	41
1,588	1,207,900	6,367	4,798,283	14,413	98	681,494	228,376	453,118	1,039,831	7,401,348	8,397,312	42
23	22,368	92	86,613	965	3	4,608	360	4,248	38,221		71,411	43
8,285	3,556,482	7,915	8,169,641	360,707	473	2,156,217	715,309	1,440,908	5,603,452		29,595,974	44
56	61,189	362	355,973			114,540	87,094	27,446	137,450		1,084,424	45
1	1,125	4	4,350			490		490	3,000		22,398	46
183	127,747					5,886	2,907	2,979	21,440		203,700	47
147	138,436					40,163	18,597	21,566	63,708		484,683	48
343	237,906			9,650	28	12,089	4,631	7,458	36,196		866,161	49
46	34,082					2,930	65	2,865	4,720		66,023	50
5	3,576	14	13,464			490		490	3,010		48,125	51
32	22,340	1	720			6,000		6,000	45,210		185,141	52
1,437	786,446	60	22,326			59,918	17,855	42,063	236,075		1,425,969	53
13	8,792					1,450	1,325	125	700		32,075	54
71	33,672					4,564	3,854	710	10,677		73,764	55
10	4,535					675	520	155	1,965		11,575	56
135	66,765					9,023	1,320	7,708	64,346		205,371	57
142	78,989					6,331	95	6,236	14,668		128,579	58
943	535,334					31,859	8,308	23,551	113,231		812,141	59
118	63,109	60	22,326			5,461	2,433	3,028	25,488		162,454	60
437	196,969	67	25,653			39,278	16,187	23,091	45,361		448,467	61
102	43,819	67	25,653			19,590	8,599	11,001	27,235	123,319	171,714	62
336	153,150					19,688	7,698	12,090	19,126		276,763	63
3,118	1,073,580	28	8,500	4,021	8	304,142	131,498	172,649	618,057		2,943,806	64
87	28,054					2,208	1,350	858	14,769		63,571	65
2,868	994,301	8	2,500	4,021	8	283,149	120,143	163,006	542,322	1786,115	2,655,463	66
178	51,175	20	6,000			18,785	10,000	8,785	60,966		224,772	67

<sup>10</sup> Includes 100 short tons of lead and 1,536 short tons of zinc.

<sup>11</sup> Includes operators as follows: Cement, 1; gypsum, 1; natural gas, 3; precious stones, 25 (no mines); tungsten, 3.

<sup>12</sup> Includes 5,207 tons of crude.

<sup>13</sup> Includes 352 tons of crude.

<sup>14</sup> Includes operators as follows: Asbestos, 1; clay, 1; garnet, 2; iron ore, 1 (2 mines); marble, 1; tungsten, 1.

<sup>15</sup> Includes operators as follows: Clay, 2; fuller's earth, 2.

TABLE 91.—DETAILED SUMMARY, STATES AND

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
68 Georgia.....	149	127	804	\$209,281	2,820	\$1,085,047	2,723	\$1,071,985	97	\$13,062
69 Bauxite.....	16	3	23	19,355	98	36,559	92	36,459	1	100
70 Clay.....	7	7	19	12,320	136	87,333	129	86,209	7	1,124
71 Coal, bituminous.....	3	2	24	20,326	168	74,649	168	74,649	.....	.....
72 Gold and silver.....	45	45	59	29,508	834	107,718	831	107,823	3	390
73 Iron ore.....	19	13	60	42,361	698	229,188	647	223,346	41	5,792
74 Limestones and dolomites.....	8	8	15	6,782	152	42,516	149	42,192	3	824
75 Manganese ore.....	6	6	7	2,964	62	21,161	58	20,207	9	954
76 Marble.....	5	5	24	23,050	310	105,709	304	104,869	6	840
77 Mineral pigments, crude.....	4	4	8	5,184	65	19,471	65	19,471	.....	.....
78 Siliceous crystalline rocks.....	26	24	45	34,586	724	382,559	700	379,281	24	3,278
79 All other minerals <sup>1</sup> .....	10	10	20	12,975	88	28,234	85	27,974	3	260
80 Idaho.....	292	290	354	576,690	3,563	3,908,504	3,500	3,902,312	3	692
81 Gold and silver.....	258	258	340	550,548	3,382	3,698,345	3,379	3,697,653	3	692
82 Limestones and dolomites.....	14	13	.....	.....	6	8,964	6	8,964	.....	.....
83 Sandstones and quartzites.....	11	10	1	1,282	7	4,655	7	4,655	.....	.....
84 All other minerals <sup>1</sup> .....	9	9	13	24,910	168	196,540	168	196,540	.....	.....
85 Illinois.....	1,116	1,013	1,869	1,910,940	40,523	26,986,397	39,597	26,707,071	926	279,326
86 Cement.....	6	6	50	59,259	488	261,928	488	261,928	.....	.....
87 Clay.....	8	7	2	1,200	42	19,602	42	19,602	.....	.....
88 Coal, bituminous.....	875	789	1,510	1,564,882	36,617	24,876,201	35,705	24,598,998	912	276,208
89 Fluorspar.....	5	5	9	5,304	71	28,846	71	28,846	.....	.....
90 Lead and zinc ore.....	14	14	12	9,120	104	51,566	103	51,390	1	175
91 Limestones and dolomites.....	160	150	284	270,025	3,178	1,737,368	3,165	1,734,420	13	2,943
92 Natural gas <sup>2</sup> .....	30	24	.....	.....	1	500	1	500	.....	.....
93 Sandstones and quartzites.....	18	18	2	1,200	22	10,296	22	10,296	.....	.....
94 Indian Territory.....	79	39	260	258,171	4,314	3,183,322	4,688	3,146,854	126	36,468
95 Asphaltum and bituminous rock.....	6	6	5	4,410	28	13,185	28	13,185	.....	.....
96 Coal, bituminous.....	58	29	248	240,581	4,763	3,154,267	4,637	3,117,799	126	36,468
97 All other minerals <sup>1</sup> .....	15	4	7	8,180	23	15,870	23	15,870	.....	.....
98 Indiana.....	16,825	3,909	1,662	1,430,538	16,473	10,729,767	16,294	10,678,201	179	51,566
99 Cement.....	9	7	65	71,166	568	266,949	567	266,713	1	231
100 Coal, bituminous.....	389	288	637	530,492	10,593	7,396,425	10,468	7,358,450	125	37,975
101 Limestones and dolomites.....	160	156	266	238,186	2,834	1,899,829	2,788	1,887,072	51	12,757
102 Natural gas.....	6,861	890	580	447,608	938	586,860	938	586,860	.....	.....
103 Petroleum.....	9,439	2,567	108	138,536	1,463	1,045,925	1,463	1,045,925	.....	.....
104 Sandstones and quartzites.....	9	9	6	4,650	41	19,389	40	19,389	1	228
105 All other minerals <sup>1</sup> .....	8	7	.....	.....	36	14,212	35	13,837	1	375
106 Iowa.....	625	589	610	500,128	10,437	6,791,161	10,263	6,737,944	174	53,217
107 Coal, bituminous.....	326	299	512	436,828	9,439	6,251,782	9,274	6,200,926	165	50,806
108 Gypsum.....	9	3	20	15,883	293	170,828	293	170,828	.....	.....
109 Lead and zinc ore.....	14	14	1	280	18	5,766	18	5,766	.....	.....
110 Limestones and dolomites.....	244	241	76	46,775	680	367,249	671	354,398	9	2,411
111 Sandstones and quartzites.....	32	32	1	360	12	5,586	12	5,586	.....	.....
112 Kansas.....	1,259	398	565	527,242	8,723	5,680,663	8,684	5,668,026	42	12,567
113 Coal, bituminous.....	175	132	367	345,162	7,017	4,719,596	6,983	4,709,223	34	10,367
114 Lead and zinc ore.....	57	57	35	21,143	223	140,249	223	140,249	.....	.....
115 Limestones and dolomites.....	115	115	82	20,011	566	288,347	566	288,347	.....	.....
116 Natural gas.....	414	57	48	82,012	100	65,952	98	65,327	2	625
117 Petroleum.....	470	12	33	31,664	146	108,756	146	108,756	.....	.....
118 Sandstones and quartzites.....	19	18	3	3,400	137	67,260	135	66,885	2	375
119 All other minerals <sup>1</sup> .....	9	7	52	73,850	537	290,434	533	289,234	4	1,200
120 Kentucky.....	1,142	665	354	666,360	10,654	5,198,792	10,427	5,147,668	227	46,124
121 Asphaltum and bituminous rock.....	5	5	32	17,420	65	22,574	65	22,574	.....	.....
122 Clay.....	5	5	4	3,200	48	17,080	48	17,080	.....	.....
123 Coal, bituminous.....	523	508	593	476,508	9,077	4,522,207	8,859	4,477,522	218	44,685
124 Fluorspar.....	14	10	81	21,107	193	79,107	191	78,373	2	234
125 Limestones and dolomites.....	70	69	68	48,405	774	319,700	768	318,545	6	1,155
126 Natural gas.....	117	19	32	34,250	50	27,560	50	27,560	.....	.....
127 Petroleum.....	392	39	63	44,376	79	69,189	79	69,189	.....	.....
128 Sandstones and quartzites.....	9	9	16	10,270	166	63,539	165	63,539	1	50
129 All other minerals <sup>1</sup> .....	7	6	15	10,824	202	72,786	202	72,786	.....	.....
130 Louisiana.....	8	3	8	7,533	61	34,444	61	34,444	.....	.....
131 All minerals <sup>14</sup> .....	8	3	8	7,533	61	34,444	61	34,444	.....	.....

<sup>1</sup> Long tons.

<sup>2</sup> Includes operators as follows: Asbestos, 1; cement, 2; graphite, 2; infusorial earth, tripoli, and pumice (operator reported under talc and soapstone); mica, 1; sandstones and quartzites, 1; slate, 1; talc and soapstone, 1; sulphur and pyrite, 1.

<sup>3</sup> Includes operators as follows: Coal, bituminous, 5; copper ore, 1; precious stones, 1; siliceous crystalline rocks, 2.

<sup>4</sup> Barrels.

<sup>5</sup> Includes 792 short tons of lead and 2,778 short tons of zinc.

<sup>6</sup> Includes 1 establishment (2 wells) for petroleum.

<sup>7</sup> Includes operators as follows: Natural gas, 1; petroleum, 2 (13 wells); siliceous crystalline rocks, 1.

<sup>8</sup> Barrels of 42 gallons.

## TERRITORIES, BY MINERALS: 1902—Continued.

WAGE-EARNERS—continued.				CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.		
Above ground.		Below ground.		Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.	
Average number.	Wages.	Average number.	Wages.									
2,401	\$927,388	419	\$157,709	\$122,619	569	\$281,145	\$42,008	\$189,187	\$566,067	.....	\$8,117,858	68
98	36,559	.....	.....	125	2	9,564	1,840	8,224	23,917	120,644	96,194	69
136	37,333	.....	.....	.....	.....	8,017	100	2,917	15,500	18,595	76,480	70
76	36,282	.....	.....	121,464	563	18,319	.....	18,319	107,994	414,088	598,018	71
187	56,594	92	38,387	.....	.....	9,684	8,486	6,198	89,128	.....	149,150	72
586	170,818	147	50,824	1,080	4	76,622	8,851	68,271	64,982	1,830,564	452,717	73
152	42,516	.....	.....	.....	.....	8,848	.....	.....	17,905	.....	111,589	74
50	17,561	.....	.....	.....	.....	2,915	.....	.....	1,940	.....	20,830	75
310	105,709	12	3,600	.....	.....	68,567	15,412	58,145	77,205	18,500	660,517	76
54	15,688	.....	.....	.....	.....	1,718	.....	1,713	18,146	.....	48,428	77
724	382,559	11	3,778	.....	.....	82,588	8,701	23,887	183,278	5,688	808,778	78
88	25,984	6	2,300	.....	.....	4,818	516	4,302	17,201	.....	108,662	79
988	1,008,812	2,625	2,899,692	43,442	43	686,470	28,108	608,306	1,626,158	.....	8,214,671	80
868	980,418	2,514	2,767,927	41,642	38	614,670	28,047	586,623	1,605,696	.....	8,177,267	81
6	3,964	.....	.....	.....	.....	110	.....	110	1,265	.....	16,074	82
7	4,656	.....	.....	.....	.....	615	.....	609	892	.....	18,777	83
57	64,775	111	181,765	1,800	5	21,014	50	20,964	18,840	.....	8,568	84
7,500	4,508,887	33,023	22,482,510	26,016	144	1,542,908	474,475	1,069,428	3,515,883	.....	38,284,410	85
484	258,676	4	3,250	.....	.....	35,621	.....	35,621	185,881	41,058,084	769,251	86
36	17,076	6	2,527	.....	.....	1,999	1,036	964	3,916	52,152	38,463	87
3,713	2,449,583	32,904	22,426,618	24,699	132	1,258,686	425,705	832,981	2,884,444	32,939,378	33,945,910	88
88	15,828	33	13,517	.....	.....	1,149	250	899	17,115	18,880	128,000	89
28	14,967	76	36,598	.....	.....	11,079	9,853	1,226	20,464	3,570	90,619	90
3,178	1,737,363	.....	.....	.....	.....	283,379	36,439	196,940	451,908	3,282,123	3,282,123	91
1	600	.....	.....	1,817	12	44	.....	44	150	.....	2,844	92
22	10,296	.....	.....	.....	.....	1,946	1,188	758	1,965	.....	32,200	93
787	457,881	4,027	2,725,441	78,639	541	366,332	249,084	117,298	329,063	.....	4,321,380	94
26	11,922	2	1,263	1,029	6	2,213	796	1,417	6,299	2,566	11,754	95
738	490,089	4,025	2,724,178	56,610	530	858,960	244,439	114,521	320,664	2,820,666	4,265,106	96
23	15,870	.....	.....	21,000	15	5,159	3,799	1,860	2,100	.....	44,520	97
6,907	3,969,236	9,566	6,740,531	2,164,380	2,678	3,387,668	1,807,948	1,579,720	8,510,666	.....	28,224,780	98
581	258,168	37	13,786	.....	.....	53,447	.....	53,447	420,168	41,879,891	1,286,228	99
1,064	669,680	9,529	6,726,745	26,603	101	449,054	215,458	233,596	729,104	9,446,424	10,399,680	100
2,534	1,399,829	.....	.....	.....	.....	196,907	17,273	179,634	499,764	.....	2,865,691	101
988	588,860	.....	.....	1,046,444	1,267	1,899,856	589,844	859,511	1,028,358	.....	7,081,844	102
1,463	1,045,925	.....	.....	1,091,383	1,310	1,286,499	1,084,070	252,429	1,126,627	7,430,896	6,526,622	103
41	19,567	.....	.....	.....	.....	1,708	928	778	3,040	.....	37,588	104
36	14,212	.....	.....	.....	.....	700	375	325	3,606	.....	27,622	105
1,942	1,108,314	8,495	5,687,847	48,106	242	373,252	220,698	152,554	951,996	.....	9,676,424	106
1,085	651,915	8,844	5,599,817	48,046	240	341,191	211,275	129,916	841,506	5,904,766	8,680,287	107
149	86,020	144	34,806	.....	.....	6,505	1,088	5,417	47,683	120,779	337,734	108
6	2,544	7	3,222	.....	.....	2,511	1,955	556	919	.....	18,358	109
690	357,249	.....	.....	60	2	22,518	6,108	16,410	71,361	.....	649,984	110
12	5,586	.....	.....	.....	.....	527	272	255	527	.....	15,061	111
2,359	1,329,558	6,867	4,351,035	213,182	366	767,069	384,012	383,057	1,374,585	.....	10,700,285	112
780	441,841	6,237	4,277,754	3,644	106	418,921	178,770	245,151	596,501	5,266,065	6,862,787	113
120	80,208	108	60,046	922	11	151,279	140,736	10,543	84,313	1125,110	787,656	114
566	288,847	.....	.....	300	6	24,378	14,089	10,289	51,842	.....	670,586	115
100	65,952	.....	.....	107,968	128	40,109	21,038	19,071	165,859	.....	324,481	116
146	103,756	.....	.....	99,467	105	51,054	28,255	22,799	296,821	881,749	292,484	117
137	67,280	.....	.....	.....	.....	5,790	2,867	3,423	18,944	.....	105,509	118
510	277,199	27	18,285	881	10	75,588	3,757	71,781	165,755	.....	1,206,902	119
2,781	1,246,382	7,873	3,947,460	224,923	315	600,613	156,562	444,051	1,207,771	.....	8,538,423	120
65	22,574	.....	.....	.....	.....	11,948	.....	11,948	7,853	22,498	68,704	121
48	17,080	.....	.....	4,000	15	1,546	897	649	10,250	26,562	44,256	122
1,299	614,447	7,778	3,907,760	10,868	73	285,792	79,189	206,603	743,813	6,766,984	6,666,967	123
98	39,407	96	39,700	300	3	22,328	7,650	14,678	18,952	29,030	143,410	124
774	319,700	.....	.....	900	8	14,443	6,461	7,982	54,809	.....	598,747	125
50	27,560	.....	.....	9,297	22	112,794	8,725	104,069	37,197	.....	365,611	126
79	69,189	.....	.....	194,462	174	147,295	53,613	93,682	227,822	248,950	172,587	127
166	68,589	.....	.....	.....	.....	928	27	901	10,165	.....	128,470	128
202	72,786	.....	.....	5,296	20	3,539	.....	3,539	102,910	.....	349,421	129
61	34,444	.....	.....	105,858	21	25,820	23,207	2,613	7,854	.....	279,327	130
61	34,444	.....	.....	105,858	21	25,820	23,207	2,613	7,854	.....	279,327	131

<sup>9</sup> Includes operators as follows: Clay, 2; oilstones, whetstones, and scythstones, 5 (6 mines); sulphur and pyrite (operator reported under coal, bituminous).

<sup>10</sup> Includes 186 short tons of lead and 376 short tons of zinc.

<sup>11</sup> Includes 3,468 short tons of lead and 21,642 short tons of zinc.

<sup>12</sup> Includes operators as follows: Cement, 2; gypsum, 5 (7 quarries).

<sup>13</sup> Includes operators as follows: Cement, 1 (2 quarries); iron ore, 3; lead and zinc ore, 1; oilstones, whetstones, and scythstones, 1.

<sup>14</sup> Includes operators as follows: Petroleum, 2 (7 wells); sulphur and pyrite, 1.



TABLE 91.—DETAILED SUMMARY, STATES AND

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
132 Maine .....	135	141	208	\$198,814	3,684	\$2,284,789	3,650	\$2,274,518	34	\$10,271
133 Limestones and dolomites .....	11	11	16	13,236	591	288,512	591	288,512		
134 Siliceous crystalline rocks .....	110	108	168	158,516	2,832	1,867,200	2,798	1,856,929	34	10,271
135 Slate .....	7	7	22	16,999	217	110,818	217	110,818		
136 All other minerals <sup>1</sup> .....	7	20	7	5,083	44	18,259	44	18,259		
137 Maryland .....	232	209	398	465,665	6,826	4,323,989	6,651	4,273,555	175	50,884
138 Cement .....	4	4	22	17,227	170	74,677	169	74,477	1	200
139 Clay .....	6	6	1	300	21	4,556	21	4,556		
140 Coal, bituminous .....	44	80	210	815,791	4,936	3,468,117	4,807	3,426,337	129	41,780
141 Flint .....	6	5	14	11,090	65	21,383	65	21,383		
142 Iron ore .....	29	28	5	1,910	76	22,349	64	20,204	12	2,145
143 Limestones and dolomites .....	102	100	53	31,289	480	159,793	419	157,865	11	1,928
144 Mineral pigments, crude .....	4	4			4	1,716	4	1,716		
145 Sandstones and quartzites .....	5	5	2	1,148	12	5,394	11	5,232	1	162
146 Siliceous crystalline rocks .....	17	13	65	67,925	817	435,372	802	432,404	15	2,968
147 Slate .....	6	6	10	4,520	145	72,179	140	71,090	5	1,089
148 All other minerals <sup>4</sup> .....	9	8	18	14,475	150	55,408	149	55,291	1	112
149 Massachusetts .....	251	234	360	309,978	4,242	2,525,405	4,220	2,519,679	22	5,726
150 Limestones and dolomites .....	11	8	17	12,606	203	99,740	208	99,740		
151 Marble .....	8	8	13	12,468	130	72,730	130	72,730		
152 Sandstones and quartzites .....	19	15	85	25,536	342	222,977	342	222,977		
153 Siliceous crystalline rocks .....	204	194	279	248,512	3,395	2,045,340	3,378	2,039,614	22	5,726
154 All other minerals <sup>5</sup> .....	9	9	16	10,856	172	84,618	172	84,618		
155 Michigan .....	203	146	1,585	1,840,132	31,951	20,108,616	31,897	20,084,501	54	19,115
156 Cement .....	11	10	102	131,131	988	585,570	988	585,570		
157 Coal, bituminous .....	81	80	99	87,780	1,445	1,075,806	1,443	1,075,228	2	577
158 Copper ore .....	20	20	419	598,076	13,887	8,744,892	13,850	8,741,087	37	13,805
159 Gypsum .....	6	4	127	171,245	359	176,607	359	176,607		
160 Iron ore .....	80	41	750	775,914	14,456	9,132,763	14,446	9,129,270	10	3,493
161 Limestones and dolomites .....	30	29	62	49,264	665	325,379	663	324,779	2	600
162 Sandstones and quartzites .....	9	8	21	23,470	151	85,108	148	85,468	8	640
163 All other minerals <sup>7</sup> .....	16	4	5	3,252	50	26,492	50	26,492		
164 Minnesota .....	176	255	675	577,336	9,760	6,391,184	9,758	6,389,657	7	1,527
165 Iron ore .....	59	31	529	430,994	8,256	5,376,933	8,254	5,376,490	2	443
166 Limestones and dolomites <sup>8</sup> .....	77	76	92	86,969	785	481,561	781	480,546	4	1,015
167 Precious stones .....		110								
168 Sandstones and quartzites .....	13	12	18	18,654	305	215,068	305	215,068		
169 Siliceous crystalline rocks .....	27	26	36	40,719	414	317,622	413	317,553	1	69
170 Missouri .....	1,045	973	1,438	1,233,811	15,851	8,757,867	15,238	8,729,776	113	27,591
171 Barytes .....	34	28	4	670	289	99,799	289	99,799		
172 Clay .....	25	25	20	10,115	129	65,169	129	65,169		
173 Coal, bituminous .....	384	345	420	825,147	6,501	3,927,158	6,486	3,909,657	65	17,501
174 Iron ore .....	34	27	15	14,766	148	57,475	147	57,305	1	170
175 Lead and zinc ore .....	374	374	777	727,021	6,612	3,691,923	6,604	3,686,773	28	6,150
176 Limestones and dolomites .....	142	136	155	129,291	1,434	752,178	1,424	749,627	10	2,551
177 Natural gas .....	13	9		232						
178 Sandstones and quartzites .....	10	7		3,375		31,865		31,865		
179 Siliceous crystalline rocks .....	11	9	16	11,614	179	104,624	171	103,629	8	1,095
180 All other minerals <sup>10</sup> .....	18	10	23	11,580	62	26,052	62	26,052		
181 Montana .....	281	271	571	912,477	10,589	11,812,150	10,530	11,809,062	9	3,088
182 Coal, bituminous .....	37	34	61	80,674	1,587	1,516,043	1,578	1,512,965	9	3,088
183 Copper ore .....	27	27	310	494,415	6,388	7,339,773	6,388	7,339,773		
184 Gold and silver .....	176	176	185	318,020	2,278	2,688,052	2,278	2,688,052		
185 Limestones and dolomites .....	10	10	4	4,091	91	70,078	91	70,078		
186 Precious stones .....	3	3	2	1,730	39	48,664	39	48,664		
187 Sandstones and quartzites .....	8	8	2	3,900	57	52,117	57	52,117		
188 Siliceous crystalline rocks .....	3	3	1	1,420	21	26,488	21	26,488		
189 All other minerals <sup>11</sup> .....	17	10	6	8,227	78	75,935	78	75,935		
190 Nebraska .....	86	35	12	8,001	178	95,935	176	95,820	2	615
191 All minerals <sup>12</sup> .....	36	35	12	8,001	178	95,935	176	95,820	2	615
192 Nevada .....	114	121	146	222,098	1,132	1,205,565	1,130	1,205,025	2	540
193 Gold and silver .....	104	104	136	210,838	1,075	1,162,837	1,073	1,161,797	2	540
194 Sandstones and quartzites .....	3	3			2	1,583	2	1,583		
195 All other minerals <sup>13</sup> .....	7	14	10	11,260	55	41,645	55	41,645		

<sup>1</sup> Includes operators as follows: Feldspar, 5; flint (operator reported under feldspar); mica, 2; precious stones, 13 (no mines).

<sup>2</sup> Barrels.

<sup>3</sup> Includes 1,995 short tons crude.

<sup>4</sup> Includes operators as follows: Feldspar, 2 (3 mines); gold and silver, 1; infusorial earth, tripoli, and pumice, 1; marble, 2; talc and soapstone, 2.

<sup>5</sup> Includes operators as follows: Asbestos, 1; clay, 1; corundum and emery, 1; feldspar (operator reported under flint); flint, 1; graphite, 1; infusorial earth, tripoli, and pumice, 1; iron ore, 1; sulphur and pyrite, 1; talc and soapstone, 1.

<sup>6</sup> Long tons.

<sup>7</sup> Includes operators as follows: Clay, 1; graphite, 2; grindstones and pulpstones (operator reported under sandstones and quartzites); oilstones, whetstones, and scythesones (operator reported under sandstones and quartzites); petroleum, 1 (13 wells).

TERRITORIES BY MINERALS, 1927—Continued

WAGE-EARNERS—Continued				CONTRACT WORK		MISCELLANEOUS EXPENSES				PRODUCT	
Above ground		Below ground		Amount paid	Number of persons	Fuel	Expenses and repairs on mine and mining plant	Rent of office, taxes, insurance, interest, and other sundries	Cost of supplies and materials	Quantity (short tons)	Value
Average number	Wages	Average number	Wages								
2,683	1,774,414	1	1,000								
2,183,591	1,183,591										
2,384	1,183,591	4,111	1,183,591								
137											
566											
21											
4											
112											
145											
169											
4,110	2,111,546	11,111	2,111,546								
288											
130											
2,342											
2,385											
20											
10,573	6,111,546	11,111	6,111,546								
998											
150											
4,117	2,111,546	11,111	2,111,546								
3,313											
3,494	2,111,546	11,111	2,111,546								
665											
151											
50											
4,172	2,111,546	5,336	2,111,546								
2,668	1,183,591	1,336	1,183,591								
736											
285											
414											
5,780	3,111,546	9,671	3,111,546	17,524	47	2,111,546	1,183,591				
235	31,399	4	31,399			11,551	11,551				
79	56,877	1	56,877			11,551	11,551				
664	2,052,442	1	2,052,442			17,822	17,822				
147	19,577	1	19,577			17,822	17,822				
2,945	1,183,591	1,336	1,183,591			17,822	17,822				
1,484	2,052,442	1,336	2,052,442			17,822	17,822				
56											
179	19,577		19,577								
62	26,552		26,552								
2,530	2,855,852	5,059	2,855,239	64,636	55	2,111,546	1,183,591				
257	230,364	1,336	1,285,079	1,000	13	115,683	41,125				
1,132	1,410,431	5,136	5,825,342	46,975		316,145	115,683				
837	974,006	1,441	1,712,047	19,167		26,943	115,683				
91	24,073										
24	25,514	15	12,150								
87	82,117										
21	26,496										
41	34,556	27	41,090	2,500	18	2,052,442					
178	95,935					2,730					
178	95,935					2,730					
410	437,291	722	765,274	7,944	13	177,355					
372	408,573	708	753,764	7,944	13	172,306					
2	1,550					351					
36	27,135	19	14,510			4,736					

<sup>1</sup> Includes 2 operators for cement.

<sup>2</sup> Includes 124,587 short tons of lead and 240,057 short tons of zinc.

<sup>3</sup> Includes operators as follows: Cement, 1; infusorial earth, tripoli, and pumice, 2; mineral pigments, crocus, 2; nickel and cobalt, 1; petroleum, 1; sulphur and pyrite, 2.

<sup>4</sup> Includes operators as follows: Corundum and emery, 1; flint, 1; graphite, 1 (6 mines, grindstones and pulpstones operator reported under sandstones and quartzites); gypsum, 2; iron ore, 3; manganese ore, 1; martite, 1.

<sup>5</sup> Includes operators as follows: Infusorial earth, tripoli, and pumice, 1 (2 quarries); limestones and dolomites, 2; sandstones and quartzites, 1.

<sup>6</sup> Includes operators as follows: Borax, 1; copper ore, 1; gypsum, 1; limestones and dolomites, 1; precious stones, 1 (1 mine); siliceous crystalline rock, 1; sulphur and pyrite, 1.

TABLE 91.—DETAILED SUMMARY, STATES AND

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
196 New Hampshire.....	56	62	92	\$68,971	1,258	\$906,494	1,245	\$904,171	8	\$2,823
197 Siliceous crystalline rocks.....	51	49	87	65,648	1,219	791,196	1,211	788,873	8	2,328
198 All other minerals <sup>1</sup> .....	5	13	5	3,328	34	15,298	34	15,298		
199 New Jersey.....	182	151	420	357,000	5,645	2,658,727	5,626	2,654,651	19	4,076
200 Clay.....	34	34	35	26,044	702	288,282	697	292,048	5	1,184
201 Iron ore.....	15	9	188	101,870	1,680	778,266	1,655	772,212	5	1,074
202 Limestones and dolomites.....	27	25	15	11,301	187	80,654	187	80,654		
203 Marl.....	10	10			6	2,860	6	2,860		
204 Sandstones and quartzites.....	22	22	28	17,847	418	282,480	416	282,080	2	400
205 Siliceous crystalline rocks.....	49	46	92	64,508	947	483,186	941	481,948	6	1,218
206 All other minerals <sup>2</sup> .....	5	5	112	185,480	1,725	843,049	1,724	842,849	1	200
207 New Mexico.....	161	207	175	209,569	2,275	1,646,833	2,252	1,639,251	23	7,582
208 Coal, bituminous.....	30	25	68	85,599	1,489	1,027,460	1,419	1,021,028	20	6,432
209 Copper ore.....	17	17	24	32,120	164	128,483	164	128,483		
210 Gold and silver.....	91	91	75	80,390	519	409,779	516	408,629	3	1,150
211 Precious stones.....	8	60	8	5,160	36	22,067	36	22,067		
212 Sandstones and quartzites.....	7	7			8	6,515	8	6,515		
213 All other minerals <sup>3</sup> .....	8	7	5	6,300	109	52,509	109	52,509		
214 New York.....	9,768	2,921	791	788,382	9,560	5,099,753	9,490	5,081,972	70	17,781
215 Buhstones and millstones.....	22	22	5	8,740	59	28,021	59	28,021		
216 Cement.....	21	20	141	160,282	2,459	1,208,313	2,425	1,194,176	34	9,138
217 Clay.....	8	7	5	2,575	14	6,396	14	6,396		
218 Corundum and emery.....	3	3	5	2,349	9	4,446	9	4,446		
219 Garnet.....	3	3	7	6,050	83	47,088	83	47,088		
220 Graphite.....	8	8	7	6,627	71	35,583	71	35,583		
221 Gypsum.....	17	15	22	32,600	214	100,986	214	100,986		
222 Iron ore.....	15	18	62	65,281	365	492,089	368	481,589	2	450
223 Limestones and dolomites.....	181	178	174	166,459	2,422	1,214,742	2,410	1,212,053	12	2,689
224 Marble.....	14	13	34	40,634	469	332,086	469	332,086		
225 Mineral pigments, crude.....	5	5			4	2,257	4	2,257		
226 Natural gas.....	612	108	76	63,015	121	84,476	121	84,476		
227 Petroleum.....	8,448	2,128	69	92,116	408	296,718	408	296,718		
228 Sandstones and quartzites.....	377	364	66	67,463	1,284	785,694	1,278	783,574	8	2,120
229 Siliceous crystalline rocks.....	22	22	47	42,942	655	857,829	643	854,402	12	2,927
230 Slate.....	11	11	17	14,645	126	69,561	124	69,104	2	457
231 Talc and soapstone.....	4	4	29	19,654	168	83,680	168	83,680		
232 All other minerals <sup>4</sup> .....	7	7	5	2,000	84	15,328	84	15,328		
233 North Carolina.....	126	187	120	84,224	1,556	517,765	1,587	514,849	19	2,916
234 Barytes.....	5	5	13	5,401	84	9,914	84	9,914		
235 Gold and silver.....	15	15	21	18,267	208	66,822	201	66,512	2	310
236 Limestones and dolomites.....	4	4	1	600	17	4,727	17	4,727		
237 Mica.....	28	26	4	1,411	50	15,160	50	15,160		
238 Monazite.....	23	22	3	2,100	88	26,818	88	26,818		
239 Siliceous crystalline rocks.....	30	27	31	28,578	615	222,868	607	221,568	8	1,300
240 Talc and soapstone.....	6	6	12	7,710	62	21,416	62	21,416		
241 All other minerals <sup>5</sup> .....	15	32	36	25,157	487	151,540	478	150,234	9	1,306
242 North Dakota.....	48	48	52	48,980	298	196,584	297	196,381	1	208
243 All minerals <sup>6</sup> .....	48	48	52	48,980	298	196,584	297	196,381	1	208
244 Ohio.....	44,984	11,388	2,530	2,551,083	37,178	23,222,630	36,809	23,119,743	364	102,937
245 Cement.....	7	7	49	57,838	375	227,548	375	227,548		
246 Clay.....	31	31	13	8,580	120	58,818	120	58,818		
247 Coal, bituminous.....	648	513	1,814	1,222,966	25,963	16,698,464	25,627	16,596,705	836	96,759
248 Grindstones and pulpstones <sup>7</sup> .....	7	7	22	10,792	139	64,288	137	63,751	2	537
249 Iron ore.....	12	9	5	2,087	111	38,901	111	38,901		
250 Limestones and dolomites.....	259	249	205	155,451	3,065	1,454,328	3,057	1,452,527	8	1,801
251 Natural gas.....	1,352	417	241	221,837	691	441,581	699	441,581		
252 Petroleum.....	42,483	10,002	450	629,369	4,017	2,915,787	4,017	2,915,787		
253 Sandstones and quartzites <sup>8</sup> .....	115	91	200	218,590	2,363	1,171,674	2,345	1,167,884	18	3,840
254 Silica sand.....	10	7	18	18,988	155	69,675	155	69,675		
255 Sulphur and pyrite.....	6	3			1	408	1	408		
256 All other minerals <sup>9</sup> .....	4	2	13	9,635	165	86,213	165	86,213		
257 Oklahoma.....	21	17	18	12,223	128	64,545	127	64,440	1	105
258 Limestones and dolomites.....	12	12	4	3,085	46	22,277	45	22,172	1	105
259 All other minerals <sup>10</sup> .....	9	5	14	9,138	82	42,268	82	42,268		

<sup>1</sup> Includes operators as follows: Infusorial earth, tripoli, and pumice, 1; mica, 2; oilstones, whetstones, and scythestones (2 mines; operator reported in Arkansas); precious stones, 10 (no mines).

<sup>2</sup> Long tons.

<sup>3</sup> Includes operators as follows: Cement, 2; lead and zinc ore, 1; slate, 1; talc and soapstone, 1.

<sup>4</sup> Includes operators as follows: Graphite, 1; iron ore, 1 (2 mines); lead and zinc ore, 1; marble, 2; mica, 1; phosphate rock, 1.

<sup>5</sup> Stones.

<sup>6</sup> Barrels.

<sup>7</sup> Includes 50 tons crude.

<sup>8</sup> Barrels of 42 gallons.

<sup>9</sup> Includes operators as follows: Crystalline quartz, 1; feldspar, 1; flint, 2; infusorial earth, tripoli, and pumice, 1; lead and zinc ore, 1; sulphur and pyrite, 1.

TERRITORIES, BY MINERALS: 1902—Continued.

WAGE-EARNERS—continued.				CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.	
Above ground.		Below ground.		Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.
Average number.	Wages.	Average number.	Wages.								
1,252	9008,189	1	3325			236,998	32,372	324,621	3134,128		\$1,176,312 196
1,219	791,196	1	325			26,719	2,372	24,347	132,122		1,147,097 197
33	14,973					274		274	2,006		23,215 198
4,436	2,075,139	1,309	563,568	\$10,770	113	303,669	110,163	193,506	2,235,964		6,605,402 199
702	298,232					19,408	6,989	12,464	67,476	494,800	612,721 200
686	277,822	1,024	495,764	10,770	113	30,114	7,915	22,199	423,231	441,879	1,238,664 201
187	80,654					7,833	3,969	3,964	23,044		188,650 202
6	2,890					60		60	236	8,172	4,865 203
418	232,430					13,352	13,647	4,705	36,080		406,726 204
947	433,166					53,135	13,620	39,515	164,562		943,474 205
1,540	755,225	185	87,824			174,772	64,178	110,599	1,515,336		3,215,302 206
594	432,223	1,681	1,214,610	43,381	173	140,055	64,438	75,617	497,949		2,636,473 207
295	195,173	1,154	829,287	5,770	81	63,990	26,668	37,322	156,513	1,048,763	1,500,230 208
29	23,842	135	98,641	10,266	31	26,858	12,123	14,735	49,408		271,270 209
141	131,252	378	278,527	32,345	61	34,110	13,127	20,983	266,816		677,168 210
22	13,382	14	8,156			1,900		1,900	2,490		51,600 211
8	6,515					536		536	370		12,291 212
109	52,509					12,661	12,520	141	82,362		178,914 213
3,367	4,557,510	1,198	642,243	355,113	284	1,276,232	369,281	906,951	3,002,564		13,350,421 214
59	28,021					849	123	726	1,489	5,156	39,570 215
2,083	1,022,946	376	180,367	4,450	4	310,772	11,644	299,128	1,374,640	4,734,147	3,656,589 216
14	6,396					1,087	400	687	1,066	8,909	14,535 217
9	4,446					2,171	1,091	1,080	1,080	2,896	44,625 218
83	47,093					3,200		3,200	8,200	2,760	97,600 219
36	19,063	35	16,530			1,124		1,064	19,543	11,375	77,437 220
141	67,408	73	33,588			14,081	7,501	6,580	31,175	96,318	259,170 221
352	162,258	613	269,781			199,587	12,885	187,202	298,960	1,555,321	1,362,987 222
2,422	1,214,742					142,206	28,662	113,544	451,876		2,508,536 223
469	332,086					31,238	6,025	100,705	100,705		577,238 224
4	2,257					90	25	65	735	1,261	4,251 225
121	84,476			77,904	97	127,530	32,439	95,091	39,920		346,471 226
406	296,713			272,759	183	269,740	194,717	65,023	440,004	1,119,730	1,530,852 227
1,284	785,694					104,438	31,909	73,134	108,159		1,408,699 228
655	357,829					29,157	10,180	18,977	94,299		651,014 229
126	69,561					8,429	3,492	4,937	16,225		126,718 230
77	46,278	86	37,402			38,736	23,226	10,560	15,253	71,100	615,350 231
24	10,753	10	4,575			1,647	1,002	645	2,750		33,719 232
1,138	387,744	418	130,021	9,000	40	76,842	19,971	56,871	118,782		927,576 233
2	450	32	9,464	1,000	10	5,896	5,690	206	2,740	14,679	44,130 234
51	23,514	122	33,308			10,238	415	9,823	26,490		71,287 235
17	4,727			8,000	30	763	488	275	3,888		23,153 236
38	11,728	12	3,432			2,952	2,592	360	3,121	(10)	77,148 237
38	25,318					2,083	1,789	344	256	11,602,000	64,160 238
615	222,868					16,463	5,585	10,878	42,894		338,750 239
54	18,716	8	2,700			27,981	720	27,261	12,447	5,238	38,962 240
243	75,423	244	76,117			10,476	2,752	7,724	25,956		235,736 241
45	23,630	253	167,904	2,795	9	23,012	1,407	21,605	88,867		334,967 242
45	23,630	253	167,904	2,795	9	23,012	1,407	21,605	88,867		334,967 243
13,765	8,080,591	23,408	15,162,069	2,701,557	2,619	7,711,026	4,192,221	3,518,805	10,126,452		57,136,922 244
866	219,962	9	7,586			71,829	1,677	70,152	231,322	597,098	714,551 245
65	23,123	55	30,685	1,414	4	7,072	3,476	3,596	12,346	142,440	101,305 246
2,792	1,644,466	23,171	15,049,008	46,818	290	1,619,451	854,604	764,847	2,082,788	23,519,894	26,933,789 247
139	64,288					9,982	1,898	8,084	19,777	49,957	500,412 248
24	10,661	87	28,240			1,556	1,508	53	345	22,657	41,976 249
3,065	1,454,323			7,276	16	139,648	41,223	98,425	560,462		3,204,996 250
699	441,581			433,026	415	491,223	193,671	292,552	1,139,201		2,355,458 251
4,017	2,915,787			2,212,923	1,392	4,896,861	3,046,994	1,849,867	5,504,792	21,014,231	20,777,359 252
2,363	1,171,674					437,827	16,596	421,232	526,521		2,078,754 253
165	69,675				2	7,566	3,139	4,427	13,596	132,921	152,274 254
1	408									8,063	26,129 255
79	39,643	86	46,570			23,011	22,441	5,570	35,300		240,917 256
123	64,545					15,830	11,667	4,163	31,934		186,706 257
46	22,277					840	200	640	6,737		50,541 258
82	42,263					14,990	11,467	3,523	25,197		136,165 259

<sup>10</sup> Cut or sheet mica, 303,816 pounds; scrap or waste, 544 short tons.  
<sup>11</sup> Pounds.  
<sup>12</sup> Includes operators as follows: Buhrstones and millstones (operator reported under siliceous crystalline rocks); clay, 3; coal, bituminous, 1; copper ore, 2; garnet, 1; graphite, 2; iron ore, 3; precious stones, 18 (1 mine); sandstones and quartzites, 2.  
<sup>13</sup> Includes operators as follows: Cement, 1; coal, bituminous, 47.  
<sup>14</sup> Includes grindstones and pulpstones, valued at \$399,726, for which all operating expenses are reported under sandstones and quartzites.  
<sup>15</sup> Includes operating expenses of grindstones and pulpstones, valued at \$399,726, produced in sandstone quarries.  
<sup>16</sup> Includes operators as follows: Gypsum (2 quarries; operator reported in Michigan); oilstones, whetstones, and scythestones, 1; phosphate rock, 1.  
<sup>17</sup> Includes operators as follows: Gypsum, 3 (5 quarries); petroleum, 1 (3 wells); sandstones and quartzites, 1.

TABLE 91.—DETAILED SUMMARY, STATES AND

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
260 Oregon	294	298	158	\$189,108	1,166	\$1,033,075	1,157	\$1,080,471	9	\$2,604
261 Coal, bituminous	9	9	82	27,660	211	144,801	204	142,617	7	2,184
262 Gold and silver	262	262	110	146,478	856	816,711	853	816,291	2	420
263 Limestones and dolomites	7	6	1	1,200	19	10,102	19	10,102		
264 Siliceous crystalline rocks	10	10	3	2,590	85	25,454	85	25,454		
265 All other minerals <sup>1</sup>	6	6	7	11,150	46	86,007	46	86,007		
266 Pennsylvania	48,672	12,266	9,368	9,592,910	190,935	114,122,437	184,512	112,658,224	6,428	1,464,213
267 Bustrones and millstones	8	8			1	616	1	616		
268 Cement	17	14	207	250,252	5,376	2,411,652	5,381	2,402,459	45	9,193
269 Clay	19	19	22	28,478	312	180,758	311	180,458	1	300
270 Coal, anthracite	384	119	3,014	2,907,298	69,691	38,716,113	65,127	37,758,598	4,564	962,515
271 Coal, bituminous	1,028	514	3,880	4,142,497	92,095	59,848,902	90,483	59,899,959	1,612	448,943
272 Feldspar	12	12	9	8,712	125	50,876	128	50,456	2	420
273 Flint	4	3	1	1,500	27	11,713	27	11,713		
274 Iron ore	47	42	91	74,788	1,140	436,207	1,118	433,295	22	2,912
275 Limestones and dolomites	907	896	287	228,826	6,984	2,881,296	6,901	2,872,285	38	9,010
276 Marble	8	8	8	7,465	169	96,623	166	95,123	3	500
277 Mineral pigments, crude	12	12	40	41,002	148	67,006	148	67,006		
278 Natural gas	5,408	363	718	769,042	2,115	1,308,205	2,115	1,308,205		
279 Petroleum	40,444	9,806	550	686,096	5,610	4,072,287	5,610	4,072,287		
280 Sandstones and quartzites	288	258	262	177,786	2,864	1,779,993	2,839	1,774,117	25	5,876
281 Silica sand	14	11	15	11,890	141	64,015	141	64,015		
282 Siliceous crystalline rocks	44	43	58	60,877	703	341,720	702	341,480	1	240
283 Slate	91	84	269	190,555	3,426	1,879,175	3,811	1,854,871	115	24,304
284 All other minerals <sup>2</sup>	7	62	7	5,864	58	26,286	58	26,286		
285 Rhode Island	22	22	56	56,150	667	435,224	667	435,224		
286 Siliceous crystalline rocks	19	19	54	55,310	638	421,608	638	421,608		
287 All other minerals <sup>3</sup>	3	3	2	840	29	13,616	29	13,616		
288 South Carolina	38	42	148	126,992	2,694	891,737	2,664	887,419	30	4,818
289 Clay	8	8	14	11,300	198	45,448	190	44,288	8	1,160
290 Phosphate rock	10	10	80	65,401	1,498	435,553	1,496	435,553		
291 Siliceous crystalline rocks	15	14	41	32,841	815	351,046	793	347,888	22	3,158
292 All other minerals <sup>4</sup>	5	10	13	17,450	183	59,690	183	59,690		
293 South Dakota	77	77	167	242,461	3,131	3,374,776	3,130	3,374,626	1	150
294 Gold and silver	40	40	148	222,590	2,914	3,217,456	2,914	3,217,456		
295 Limestones and dolomites	10	10	1	1,278	55	43,714	55	43,714		
296 Mica	3	3	9	9,580	22	18,288	22	18,288		
297 Natural gas	6	3								
298 Sandstones and quartzites	12	12	4	2,833	94	69,509	93	69,359	1	150
299 All other minerals <sup>5</sup>	6	9	5	6,180	46	25,809	46	25,809		
300 Tennessee	241	208	773	664,379	10,890	4,864,241	10,564	4,805,250	326	58,991
301 Barytes	6	6	1	1,000	26	7,525	24	7,225	2	300
302 Clay	9	9	4	1,900	46	13,140	46	13,140		
303 Coal, bituminous	84	73	418	381,939	6,220	3,213,532	6,046	3,181,590	174	31,842
304 Iron ore	22	18	106	71,535	1,299	512,702	1,206	495,298	94	17,409
305 Limestones and dolomites	51	44	37	27,826	698	222,475	681	219,918	17	2,537
306 Marble	11	10	38	37,480	607	218,764	604	218,404	3	390
307 Phosphate rock	40	37	115	82,125	1,597	498,809	1,577	490,332	20	3,457
308 Sandstones and quartzites	3	3	3	1,140	10	4,086	10	4,086		
309 All other minerals <sup>6</sup>	15	8	51	59,484	387	178,208	371	175,142	16	3,066
310 Texas	1,067	308	1,210	664,802	3,858	2,261,639	3,814	2,253,164	39	8,475
311 Clay	3	3								
312 Coal, bituminous	26	24	91	90,086	1,979	991,391	1,963	985,565	26	5,826
313 Limestones and dolomites	35	34	30	21,393	275	124,272	271	123,118	4	1,154
314 Natural gas	14	5	1	2,000						
315 Petroleum	955	211	999	444,129	723	699,209	723	699,209		
316 Quicksilver	5	3	19	19,876	253	87,414	227	86,484	6	980
317 Sandstones and quartzites	13	13	11	8,689	191	100,399	191	100,399		
318 Siliceous crystalline rocks	8	8	8	8,400	56	41,184	55	41,084	1	150
319 All other minerals <sup>7</sup>	8	7	51	70,229	396	217,770	394	217,406	2	365
320 Utah	178	170	413	587,005	5,712	5,089,122	5,691	5,081,068	21	8,054
321 Coal, bituminous	39	36	67	80,065	1,576	1,254,090	1,562	1,249,096	14	4,994
322 Copper ore	18	13	51	71,155	487	439,612	487	439,612		
323 Gold and silver	88	83	261	391,317	3,349	3,176,599	3,345	3,174,289	4	2,310
324 Limestones and dolomites	16	15	7	2,295	108	77,296	108	77,296		
325 Sandstones and quartzites	10	6	6	6,720	65	50,225	64	50,075	1	150
326 Siliceous crystalline rocks	5	5			1	330	1	330		
327 All other minerals <sup>8</sup>	12	12	21	35,458	131	90,970	129	90,370	2	600

<sup>1</sup> Includes operators as follows: Borax, 1; copper ore, 2; gypsum, 1; nickel and cobalt, 1; sandstones and quartzites, 1.  
<sup>2</sup> Stones.  
<sup>3</sup> Barrels.  
<sup>4</sup> Long tons.  
<sup>5</sup> Includes 4,288 tons crude.  
<sup>6</sup> Barrels of 42 gallons.  
<sup>7</sup> Includes operators as follows: Crystalline quartz, 1; garnet, 1; graphite, 2; phosphate rock, 1; precious stones, 55 (no mines); talc and soapstone, 2.  
<sup>8</sup> Includes operators as follows: Graphite, 1; limestones and dolomites, 2.

TERRITORIES, BY MINERALS: 1902—Continued.

WAGE-EARNERS—continued.				CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.	
Above ground.		Below ground.		Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.
Average number.	Wages.	Average number.	Wages.								
562	\$473,043	604	\$560,032	\$19,522	57	\$143,748	\$60,499	\$63,249	\$408,112		\$2,087,389 260
42	28,108	169	116,698			25,787	1,607	24,130	86,855	65,648	160,075 261
436	887,777	419	428,984	19,197	55	114,402	58,292	56,110	299,706		1,851,858 262
19	10,102					120		120	4,220		20,133 263
35	26,454					977	600		377		35,429 264
80	21,607	16	14,400	325	2	2,512		2,612	16,836		16,899 265
68,890	34,582,467	122,545	79,589,970	5,598,074	5,102	23,218,856	10,738,258	12,482,598	33,111,903		286,871,417 266
1	616					121	63	58	65	*199	1,978 267
5,378	2,411,652					711,782	18,448	698,334	4,048,608	*9,860,802	10,223,267 268
248	104,406	64	26,347	300	1	13,825	6,445	7,380	42,849	161,546	288,811 269
27,964	12,183,983	41,727	26,582,130	406,421	1,731	9,807,289	4,859,051	4,943,188	12,740,780	*36,940,710	76,173,586 270
11,660	6,996,888	80,485	52,852,514	474,679	985	6,178,975	2,714,816	3,464,159	8,224,475	98,574,867	106,032,460 271
125	50,876					9,074	4,818	4,256	82,423	15,121	115,699 272
27	11,713					3,187	2,074	1,068	4,425	*9,785	42,721 273
878	829,450	267	106,757	1,228	4	61,876	26,843	35,033	166,422	*822,932	1,225,453 274
6,994	2,881,296					260,428	168,747	91,681	972,906		5,458,433 275
169	95,623					4,274	300	3,974	28,480		180,423 276
107	49,553	41	17,453			21,259	12,651	8,608	22,816	20,807	246,346 277
2,115	1,308,205			1,745,500	968	2,899,633	1,223,278	1,676,355	2,687,228		14,352,133 278
5,610	4,072,287			2,969,046	1,391	3,275,131	1,916,987	1,358,144	3,856,606	*12,068,890	15,266,093 279
2,864	1,779,998					106,608	51,792	56,816	208,983		2,900,108 280
141	64,015					8,255	2,475	5,780	16,572	268,262	205,675 281
708	841,720					41,056	25,025	16,031	128,968		661,062 282
3,426	1,879,175					312,186	207,180	105,056	417,773		3,547,322 283
47	21,517	11	4,769	900	2	2,497	815	1,682	12,576		69,797 284
667	485,224					25,988	15,148	10,795	85,127		774,611 285
638	421,608					22,898	13,643	9,255	71,908		784,623 286
29	13,616					3,040	1,500	1,540	13,219		39,988 287
2,613	863,637	81	23,100			109,890	48,691	61,199	342,379		1,334,134 288
198	45,448					3,185		3,185	11,612	29,136	107,325 289
1,498	435,553					65,157	38,833	26,324	162,586	*827,557	960,208 290
315	351,046					84,047	7,488	26,559	181,771		593,848 291
102	31,590	81	28,100			7,501	2,870	4,631	86,160		177,758 292
1,069	1,066,146	2,062	2,308,630	8,849	12	264,452	8,736	255,716	1,992,575		6,769,104 293
856	911,724	2,058	2,805,732			240,112	6,406	233,706	1,986,617		6,464,258 294
55	43,714					366	26	340	10,455		86,605 295
19	15,900	8	2,388			7,406		7,406	4,579	(10)	18,450 296
				7,943	5						10,280 297
94	69,509					4,669	2,259	2,410	9,703		110,789 298
45	25,299	1	510	406	7	11,899	45	11,854	81,221		73,722 299
4,722	1,671,384	6,168	3,192,857	174,496	887	720,488	414,867	306,116	850,485		9,533,782 300
26	7,525					475	455	20	540	3,255	14,647 301
46	13,140					3,745	60	3,685	767	14,650	27,171 302
834	400,088	5,386	2,813,444	14,094	71	432,029	245,001	187,028	390,561	4,382,968	5,399,721 303
845	276,987	454	285,765			111,854	98,672	18,182	144,540	*874,542	1,128,627 304
698	222,475					11,462	5,749	5,713	101,195		482,063 305
607	213,764					11,268	6,100	5,168	18,725		512,256 306
1,585	472,509	62	21,300	157,402	306	81,882	58,754	23,128	93,715	*432,608	1,308,872 307
10	4,086					329		329	660		7,670 308
121	55,860	266	122,348	3,000	10	67,439	9,576	57,863	99,782		651,885 309
1,823	1,235,452	2,030	1,026,187	1,887,796	1,098	923,769	295,130	623,639	1,051,457		6,981,582 310
287	57,807	1,742	904,084	83	2	150		150	99,127	310	455 311
275	124,272					102,287	17,499	84,788	34,222	901,912	1,477,245 312
						8,458	2,570	5,888	580		228,662 313
						2,612	2,082	580	125		14,963 314
723	699,209			1,868,463	1,061	713,176	261,150	452,026	675,987	*18,515,017	4,174,731 315
47	24,881	186	62,583	6,305	4	6,305		6,305	73,373	(11)	254,350 316
191	100,899					7,644	5,415	2,229	21,261		165,565 317
56	41,184					2,304	1,295	1,009	5,095		60,003 318
294	158,200	102	69,570	5,248	14	80,883	5,169	75,714	142,317		605,568 319
1,436	1,249,964	4,276	3,839,168	37,054	126	761,557	41,096	720,459	1,885,658		12,378,350 320
261	180,228	1,315	1,073,862	340	2	94,123	643	98,480	196,114	1,574,521	1,797,454 321
41	40,984	446	393,678			71,448	12,166	59,282	166,226		1,459,192 322
848	821,569	2,501	2,855,030	28,493	77	570,250	23,243	547,007	1,312,176		8,500,904 323
103	77,296			250	1	4,457	1,060	3,377	75,046		186,663 324
65	50,225			500	1	4,460	840	3,620	5,070		105,011 325
1	330					63		63	1,479		1,479 326
117	79,372	14	11,598	7,471	45	16,756	3,126	13,630	80,896		327,647 327

\* Includes operators as follows: Gold and silver, 3; limestones and dolomites, 1; manganese ore, 1; precious stones, 5 (no mines).

<sup>10</sup> 6,000 pounds cut or sheet mica, 205 short tons rough as mined.

<sup>11</sup> Includes operators as follows: Cement, 1; graphite, 2; gypsum, 2; lithium ore, 1; precious stones, 3 (no mines).

<sup>12</sup> Includes operators as follows: Copper ore, 2; fluorspar, 1; gold and silver, 2; mineral pigments, crude, 1; natural gas, 1 (2 wells); petroleum, 1 (7 wells).

<sup>13</sup> Quicksilver, 5,319 flasks (764 pounds each); cinnabar, 1,300 short tons.

<sup>14</sup> Includes operators as follows: Asphaltum and bituminous rock, 1; cement, 2; gold and silver, 1; gypsum, 2; iron ore, 1 (2 mines).

<sup>15</sup> Includes operators as follows: Asphaltum and bituminous rock, 2; cement, 1; clay, 1; gypsum, 1; iron ore, 4; marble, 2; sulphur and pyrite, 1.

TABLE 91.—DETAILED SUMMARY, STATES AND

STATE OR TERRITORY AND MINERALS.	Number of mines, quarries, and wells.	Number of operators.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.					
			Number.	Salaries.	Total.		Men 16 years and over.		Boys under 16 years.	
					Average number.	Wages.	Average number.	Wages.	Average number.	Wages.
328 Vermont .....	192	160	433	\$376, 077	5, 396	\$3, 114, 399	5, 334	\$3, 096, 501	64	\$15, 898
329 Limestones and dolomites .....	14	13	12	7, 963	156	65, 083	156	65, 083		
330 Marble .....	22	16	185	184, 377	2, 074	1, 206, 208	2, 068	1, 206, 308	6	900
331 Siliceous crystalline rocks .....	74	68	123	104, 656	1, 505	953, 950	1, 435	953, 508	20	5, 442
332 Slate .....	76	58	97	78, 442	1, 639	874, 263	1, 601	864, 707	38	9, 556
333 All other minerals <sup>1</sup> .....	6	5	1	150	24	9, 896	24	9, 896		
334 Virginia .....	192	140	700	546, 204	8, 998	3, 458, 450	8, 606	3, 391, 922	388	66, 528
335 Barytes .....	4	3	10	8, 088	37	13, 047	37	13, 047		
336 Buhrstones and millstones .....	3	3	2	942	17	6, 725	17	6, 725		
337 Cement .....	3	3	48	44, 675	178	88, 428	172	82, 126	6	1, 297
338 Coal, bituminous .....	26	22	179	155, 980	3, 004	1, 407, 867	2, 884	1, 385, 948	120	21, 919
339 Gold and silver .....	5	5	4	1, 815	48	11, 584	48	11, 584		
340 Iron ore .....	62	26	267	174, 084	2, 686	888, 958	2, 493	856, 737	193	32, 221
341 Limestones and dolomites .....	37	28	63	35, 459	890	290, 979	854	284, 643	36	6, 386
342 Manganese ore .....	6	6	10	4, 241	113	33, 908	109	33, 463	4	440
343 Siliceous crystalline rocks .....	17	17	21	12, 904	469	190, 322	464	189, 272	5	1, 050
344 Slate .....	4	4	15	11, 490	247	97, 645	240	95, 997	7	648
345 Sulphur and pyrite .....	6	4	32	29, 970	655	222, 986	642	220, 969	13	2, 017
346 All other minerals <sup>2</sup> .....	19	20	64	66, 656	654	211, 011	650	210, 411	4	600
347 Washington .....	90	84	258	328, 289	4, 567	3, 735, 484	4, 528	3, 722, 326	39	13, 158
348 Coal, bituminous .....	27	22	160	221, 915	3, 981	3, 220, 263	3, 898	3, 207, 205	38	13, 058
349 Gold and silver .....	31	31	34	36, 065	229	232, 058	229	232, 058		
350 Limestones and dolomites .....	12	12	22	35, 701	147	87, 850	147	87, 850		
351 Marble .....	5	5	12	10, 400	63	46, 099	62	45, 999	1	100
352 Sandstones and quartzites .....	3	3	4	4, 100	32	23, 237	32	23, 237		
353 Siliceous crystalline rocks .....	9	8	20	11, 948	137	95, 949	137	95, 949		
354 All other minerals <sup>3</sup> .....	3	3	6	8, 180	28	30, 028	28	30, 028		
355 West Virginia .....	14, 874	5, 192	2, 614	2, 443, 150	30, 002	17, 469, 826	29, 132	17, 252, 962	870	216, 864
356 Clay .....	4	4	1	720	41	25, 022	41	25, 022		
357 Coal, bituminous .....	522	406	1, 987	1, 766, 448	23, 914	13, 524, 429	23, 065	13, 312, 617	849	211, 612
358 Limestones and dolomites .....	174	167	31	27, 259	1, 068	426, 401	1, 059	424, 364	9	2, 037
359 Natural gas .....	949	63	221	225, 501	634	410, 845	634	410, 845		
360 Petroleum .....	13, 109	4, 446	328	399, 207	3, 800	2, 773, 312	3, 800	2, 773, 312		
361 Sandstones and quartzites .....	110	100	38	18, 965	453	272, 123	442	269, 204	11	2, 919
362 All other minerals <sup>4</sup> .....	6	6	8	5, 050	92	37, 694	91	37, 598	1	96
363 Wisconsin .....	411	392	275	232, 758	3, 583	1, 987, 565	3, 570	1, 963, 964	13	3, 601
364 Clay .....	3	3	2	3, 600	36	16, 050	34	15, 450	2	600
365 Iron ore .....	16	10	33	85, 262	1, 361	837, 631	1, 354	835, 394	7	2, 267
366 Lead and zinc ore .....	90	90	60	26, 202	417	192, 209	416	191, 943	1	266
367 Limestones and dolomites .....	216	207	82	58, 353	1, 062	539, 189	1, 061	538, 959	1	210
368 Sandstones and quartzites .....	62	62	13	9, 129	199	109, 066	198	108, 958	1	108
369 Siliceous crystalline rocks .....	18	15	30	31, 284	391	236, 495	390	236, 345	1	150
370 All other minerals <sup>5</sup> .....	6	5	15	13, 928	117	56, 915	117	56, 915		
371 Wyoming .....	74	50	158	188, 616	4, 486	3, 432, 059	4, 451	3, 417, 709	35	14, 350
372 Coal, bituminous .....	36	22	125	159, 153	4, 197	3, 207, 545	4, 162	3, 188, 195	35	14, 350
373 Gold and silver .....	4	4	4	3, 245	25	24, 570	25	24, 570		
374 Limestones and dolomites .....	3	3			7	5, 640	7	5, 640		
375 Sandstones and quartzites .....	12	12	3	2, 088	74	58, 897	74	58, 897		
376 All other minerals <sup>6</sup> .....	19	9	21	24, 180	188	135, 407	188	135, 407		

<sup>1</sup> Includes operators as follows: Buhrstones and millstones, 1; clay, 2; iron ore, 1; mineral pigments, crude, 1; oilstones, whetstones, and scythestones (1 quarry; operator reported in Arkansas).

<sup>2</sup> Stones.

<sup>3</sup> Barrels.

<sup>4</sup> Long tons.

<sup>5</sup> Includes operators as follows: Asbestos, 1; copper ore, 1; flint, 1; gypsum, 2; infusorial earth, tripoli, and pumice, 2; lead and zinc ore (2 mines; operator reported under iron ore); marl, 1; mica, 2; mineral pigments, crude, 2; precious stones, 3 (no mines); rutile, 1; sandstones and quartzites, 2; talc and soapstone, 2.

## TERRITORIES, BY MINERALS: 1902—Continued.

WAGE-EARNERS—continued.				CONTRACT WORK.		MISCELLANEOUS EXPENSES.			Cost of supplies and materials.	PRODUCT.		
Above ground.		Below ground.		Amount paid.	Number of employees.	Total.	Royalties and rent of mine and mining plant.	Rent of offices, taxes, insurance, interest, and other sundries.		Quantity (short tons).	Value.	
Average number.	Wages.	Average number.	Wages.									
5,398	\$3,112,563	5	\$1,886			\$382,784	\$101,546	\$281,188	\$1,076,143		\$5,904,705	328.
156	65,083					5,810	2,750	3,060	116,801		225,703	329
2,074	1,206,206					226,103	27,663	198,440	523,075		2,628,164	330
1,505	958,950					70,653	17,089	53,614	272,888		1,570,423	331
1,639	874,263					79,700	58,794	25,906	162,410		1,464,918	332
19	8,059	5	1,536			468	300	168	1,469		15,497	333
5,289	1,846,134	3,704	1,612,316	\$35,964	114	608,290	318,763	284,527	928,387		6,607,807	334
21	8,047	16	5,000			10,248	9,650	598	2,087		12,400	335
17	6,725					185	150	35	155		11,435	336
163	79,423	15	4,000			31,487		31,487	91,100		327,659	337
309	179,444	2,635	1,223,423	27,600	52	815,394	177,199	138,185	215,458	\$284,000	2,548,585	338
17	5,186	26	6,598			444	370	74	4,011		2,723	339
2,002	641,286	684	247,672	6,730	53	120,563	98,429	27,134	201,426	\$973,301	1,652,799	340
890	230,979					24,898	6,659	18,239	126,356		535,113	341
73	22,418	40	11,485			600	421	179	8,691	\$3,041	29,444	342
469	190,322					12,466	10,168	2,298	22,290		282,046	343
247	97,645					24,866	2,200	22,166	20,964		160,961	344
339	122,431	266	100,555	1,134	4	23,285		23,285	137,491	\$127,642	501,642	345
632	202,228	22	8,783	500	5	39,369	13,522	20,847	97,758		620,700	346
1,206	844,457	3,359	2,891,027	29,600	80	225,161	56,558	168,603	615,807		5,398,659	347
773	532,485	3,158	2,687,778	200	3	180,213	40,780	139,433	473,254	2,681,214	4,572,295	348
51	53,494	173	178,574	29,400	27	23,651	14,376	8,775	55,668		338,351	349
147	87,850					8,498	902	7,596	28,426		218,514	350
63	46,099					9,350		9,350	22,349		61,176	351
32	23,237					360		360	4,815		30,725	352
137	96,949					2,644		2,644	21,264		147,273	353
5	3,553	23	24,675			455		455	10,532		30,028	354
10,138	6,080,421	19,364	11,899,405	5,194,279	1,733	7,468,346	3,874,780	3,593,566	8,519,767		48,378,414	355
14	6,156	27	18,366			1,618		1,618	10,421	57,506	43,266	356
4,077	2,153,890	19,837	11,370,589	23,092	79	2,087,528	1,215,940	871,588	2,327,377	24,570,826	24,748,658	357
1,068	426,401					8,144	376	7,768	78,146		616,366	358
634	410,845			994,540	298	322,639	507,868	314,771	1,496,069		5,390,181	359
3,800	2,773,312			4,176,647	1,406	4,523,499	2,132,243	2,391,256	4,564,908	\$13,513,345	17,040,317	360
453	272,123					17,533	14,756	2,777	28,500		428,582	361
92	37,694					7,365	3,597	3,768	15,346		116,094	362
2,294	1,222,757	1,289	764,308	3,758	20	427,847	260,375	167,472	804,142		4,427,813	363
34	15,150	2	900			1,225	877	348	3,092	2,735	23,178	364
334	216,118	977	621,543	2,750	10	247,149	181,243	65,906	375,969	\$783,996	1,800,364	365
122	56,924	295	135,285	1,006	10	54,534	62,376	1,658	56,774	\$21,999	473,652	366
1,062	539,169					47,052	3,675	43,377	290,150		1,351,056	367
199	109,066					3,632	317	2,815	17,169		207,086	368
391	236,495					26,211	622	25,589	35,409		369,137	369
102	49,835	15	7,060			48,044	20,265	27,779	25,589		202,338	370
1,153	886,990	3,333	2,545,069	15,547	21	280,602	95,222	185,380	318,496		5,634,236	371
833	630,663	3,314	2,526,332	12,747	17	224,947	63,095	161,852	669,326	4,429,491	5,236,339	372
8	7,667	17	16,903	300	1	160		160	11,139		4,923	373
7	5,640					2		2	225		6,340	374
74	58,897					2,291	1,310	981	4,337		90,691	375
131	134,123	2	1,234	2,500	3	53,202	30,317	22,885	133,467		345,938	376

<sup>6</sup> Includes operators as follows: Clay, 1; copper ore, 1; molybdenum, 1.

<sup>7</sup> Barrels of 42 gallons.

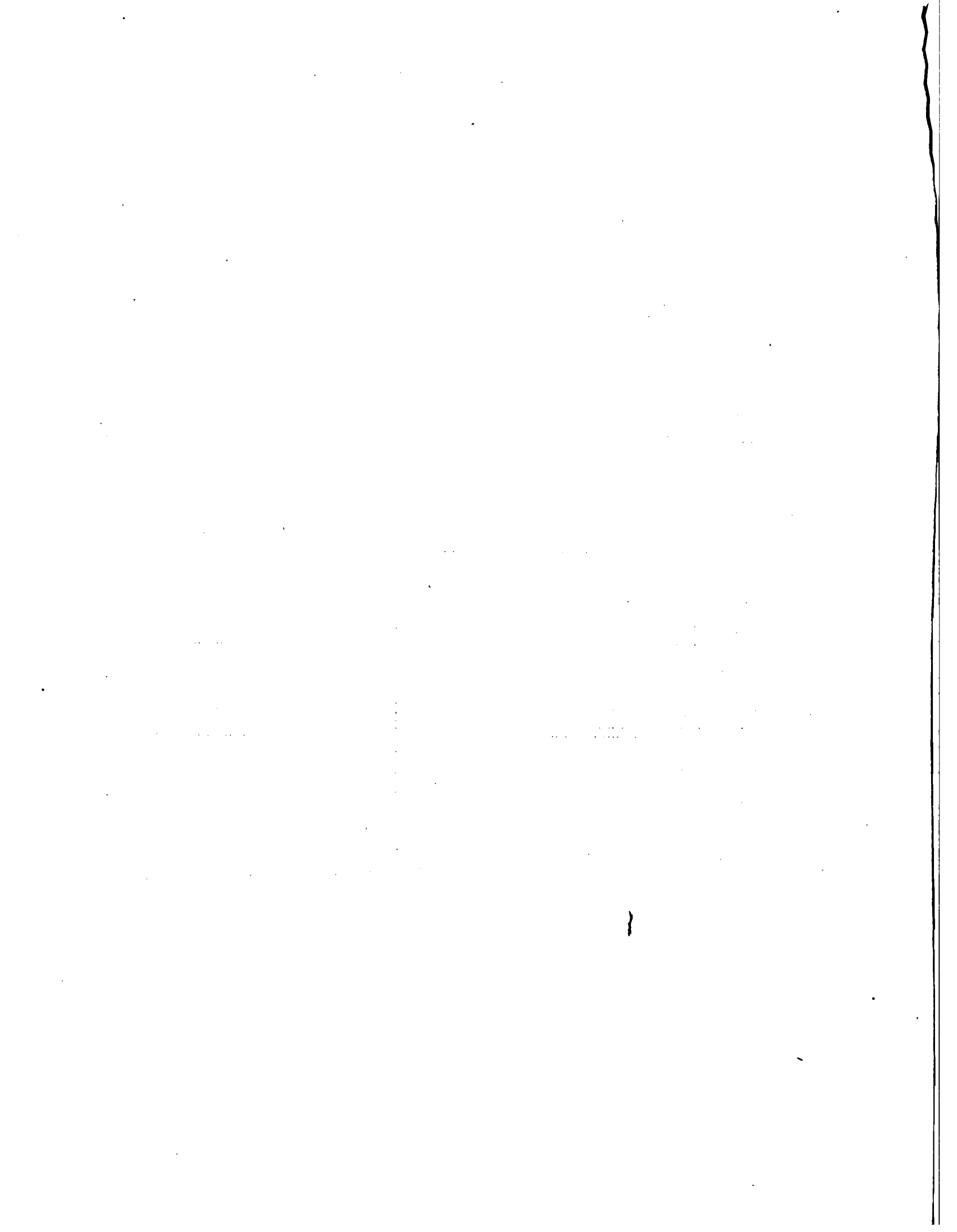
<sup>8</sup> Includes operators as follows: Cement, 1; grindstones and pulpstones, 2; iron ore, 1; silica sand, 2.

<sup>9</sup> Includes 2,623 short tons of lead and 19,376 short tons of zinc.

<sup>10</sup> Includes operators as follows: Cement, 2; copper ore, 1; graphite, 1 (2 mines); mineral pigments, crude, 1.

<sup>11</sup> Includes operators as follows: Copper ore, 1; graphite (1 mine; operator reported in South Dakota); grindstones and pulpstones (operator reported under sandstones and quartzites); gypsum, 2 (3 quarries); iron ore, 1; petroleum, 2 (13 wells); precious stones, 3 (no mines).











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Census ; 9)

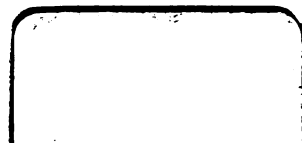
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Census ; 9)

DATE DUE	BORROWER'S NAME
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TN23 .U54.

**DATE DUE**